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Will be held in Springfield the

Third Tuesday of May

AND TWO SUCCEEDING DAYS (Viz: 15th, 16th and 17th), 1900.

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THE USE OF SCHLEICH'S MIXTURE FOR GENERAL ANÆSTHESIA, IN ONE HUNDRED AND TEN OPERATIONS IN THE NOSE AND THROAT.*

BY W. K. M'LAUGHLIN, M. D., JACKSONVILLE.

Schleich, of Berlin, in 1895, gave the results of his experiments with a new mixture for general anæsthesia.

These mixtures were composed of ether, chloroform and petrolic ether (benzine).

Mixture No. 1. Boiling point, 100.4° F. Chloroform, 45 c.c.; petrolic ether, 15 c.c.; sulphuric ether, 180 c.c.

Mixture No. 2. Boiling point, 104° F. Chloroform, 45 c.c.; petrolic ether, 15 c.c.; sulphuric ether, 150 c.c.

Mixture No. 3. Boiling point, 107.6° F. Chloroform, 30 c.c.; petrolic ether, 15 c.c.; sulphuric ether, 80 c.c.

These formulæ are by volume, not by weight. Schleich's theory is that an anæsthetic should have a boiling point about equal to the temperature of the body; he moreover states that the boiling point can be changed to any degree, and that the mixture will continue to boil without decomposition as long as its temperature remains near the determined boiling point; that mixtures of ether, with a boiling point near the temperature of the body, absorbed during respiration, will boil when expired with the air of the lungs. Thus Mixture No. 1 with a boiling point nearest the temperature of the body, is most evanescent, and is suggested for very short operations. Mixtures Nos. 2 and 3 for those more prolonged.

By an examination of the following tables, it will be seen that this method of anæsthesia is very rapid. Though no attention was paid to abstinence from food, prior to the operation, there was little or no disturbance of the stomach, and, in all the cases operated upon, no bronchitis or broncho-pneumonia followed. A rapid return to consciousness and control of mental faculties ensued, which is especially desirable in operations on the nose and throat; where we are so apt to meet with sudden and copious hæmorrhage.

*Read at the 49th Annual Meeting, Cairo, May 18, 1899.

REPORT OF THE USE OF SCHLEICH'S MIXTURE FOR ANÆSTHESIA IN NOSE AND THROAT.

No.	Date 1898-99.	Sex.	Age.	Operated on for	Time required.	Time under anæsth.	No. of Solution.	Amount of Solution.	Emesis.	Remarks.
1	Nov. 11	M	9	Hyp. Tonsil	15 min.	30 min.	1	4 drach.		Ether used
2	" 14	F	10	Adenoids	10 "	5 "		5 "	No.	
3	" 16	M	14	"	7 "	4 "		4 "	No.	
4	" 16	M	14	"	10 "	4 "		4 "	No.	
5	" 17	M	13	"	5 "	4 "		3 "	No.	
6	" 17	M	13	"	6 "	4 "		2½ "	No.	
7	" 17	M	12	"	5 "	4 "		3 "	No.	
8	" 18	M	14	"	4 "	3 "		3 "	No.	
9	" 18	M	11	"	11 "	4 "		5½ "	Yes.	5 times, gag removed too soon.
10	" 21	M	14	"	6 "	3 "		4 "	No.	
11	" 22	M	14	Ad. & Hyp. Ton.	4 "	4 "		2½ "	No.	
12	" 22	M	11	Adenoids	3½ "	3½ "		1½ "	No.	
13	" 22	M	10	"	7 "	5 "		"	Yes.	Three times
14	" 22	F	9	"	3 "	3 "		"	No.	
15	" 22	F	8	"	6 "	3 "		2&20 M	No.	
16	" 22	F	13	"	5 "	3 "		2 "	No.	
17	" 28	M	12	"	10 "	3 "		4½ "	Yes.	New anæsthetic M
18	" 28	M	14	"	12 "	3 "		4½ "	Yes.	" "
19	" 28	M	14	"	6 "	3 "		2½ "	Yes.	" "
20	" 28	M	6	Ad. & Hyp. Ton.	5 "	3 "		2½ "	Yes.	" "
21	" 29	F	11	" "	5 "	6 "		2½ "	Yes.	" "
22	" 29	F	9	" "	5 "	6 "		3 "	Yes.	" "
23	" 29	F	15	Adenoids	7 "	4 "		3 "	No.	
24	" 30	M	13	Ad. & Hyp. Ton.	10 "	6 "		5 "	Yes.	Vomited once
25	" 30	M	14	Adenoids.	9 "	3 "		4½ "	Yes.	Several times
26	" 30	M	6	Ad. & Hyp. Ton.	5 "	5 "		4 "	No.	
27	" 30	F	10	" "	4 "	5 "		3 "	No.	

Report of the Use of Schleich's Mixture for Anæsthesia in Nose and Throat—Continued.

No.	Date 1898-99.	Sex.	Age.	Operated on for	Time required.	Time under anæsth.	No. of Solution.	Amount of Solution.	Emesis.	Remarks.
28	Dec. 2	F	9	Adenoids	4½ min.	3 min.	2	3 drach.	No.	
29	" 3	F	10	"	8 "	10 "	2	5¾ "	Yes.	Once
30	" 3	F	16	"	5½ "	3 "	2	4 "	No.	
31	" 6	F	10	"	7 "	3 "	2	3 "	Yes.	Two times
32	" 7	F	11	Hyp. Ton.	3½ "	3 "	2	2 "	Yes.	" "
33	" 7	F	10	Adenoids	5 "	3 "	2	3 "	Yes.	Once
34	" 8	F	14	"	4 "	3 "	2	3½ "	No.	
35	" 8	F	17	"	3½ "	3 "	2	2½ "	No.	
36	" 8	F	9	"	4 "	3 "	2	2½ "	No.	
37	" 8	F	10	"	3 "	3 "	2	3 "	Yes	Three times
38	" 9	M	11	Ad. & Hyp. Ton.	4½ "	3 "	2	3 "	No.	
39	" 9	M	14	Adenoids	4½ "	3½ "	2	2½ "	Yes	Two times
40	" 10	F	15	Ad. & Hyp. Ton.	3 "	3 "	2	4 "	No.	
41	" 10	F	15	Hyp. Ton.	4 "	3 "	2	3 "	No.	
42	" 12	F	14	Adenoids	4 "	3 "	2	3½ "	No.	
43	" 12	F	12	"	3 "	3 "	2	2½ "	No.	
44	" 15	F	14	Ad. & Hyp. Ton.	3 "	3 "	2	2½ "	No.	
45	" 15	F	14	" L. "	4 "	3 "	2	3½ "	Yes.	Once
46	" 15	F	15	Adenoids	4½ "	3½ "	2	5 "	Yes.	"
47	" 15	F	14	"	5 "	3 "	2	4 "	Yes.	Two times
48	" 16	F	8	"	3½ "	3 "	2	3 "	No.	
49	" 16	F	12	Ad. & Hyp. Ton.	4 "	4 "	2	3 "	Yes.	Two times
50	" 17	F	10	" "	3 "		2	2 "	No.	
51	" 19	M	16	Adenoids	2 "	4 "				Idiosyncrasy
52	" 19	M	16	Ad. & Hyp. Ton.	2½ "	11½ "	2	1¾ "	No.	
53	" 20	M	12	Adenoids	2½ "	3½ "	2	2 "	No.	
54	" 20	M	15	Hyp. Ton.	3 "	5 "	2	1 "	No.	
55	" 21	F	10	Adenoids	2½ "	3 "	2	3½ "	No.	
56	" 21	F	10	"	3½ "	4 "	2	3½ "	Yes.	Three times
57	" 21	F	9	"	2 "	3 "	2	2½ "	Yes.	Two times
58	" 22	M	15	"	2 "	3 "	2	2½ "	No.	
59	" 22	M	12	"	1½ "	4 "	2	1½ "	No.	
	1899									
60	Jan. 23	F	19	Ad. & Hyp. Ton.	4 "	3 "	2	3 "	Yes.	Two times
61	" 23	F	20	Adenoids	4 "	3 "	2	3 "	No.	
62	" 23	F	9	"	3½ "	3 "	2	3 "	No.	
63	" 23	F	14	"	4½ "	3 "	2	3 "	Yes.	Once
64	" 24	F	14	"	4 "	4 "	2	2 "	No.	
65	" 24	F	21	Hyp. Ton.	6 "	5 "	2	4 "	No.	
66	" 24	F	14	Adenoids	5 "	4 "	2	3 "	Yes.	Once
67	" 24	F	7	Ad. & Hyp. Ton.	3 "	4½ "	2	3 "	No.	
68	" 24	F	11	" "	4 "	6½ "	2	3½ "	No.	
69	" 25	M	17	" "	7 "	4 "	2	3 "	No.	
70	" 25	M	15	Adenoids	7 "	4 "	2	4 "	No.	
71	" 25	M	12	Ad. & Hyp. Ton.	3½ "	5 "	2	3½ "	No.	
72	" 25	M	12	Adenoids	3 "	4 "	2	3 "	No.	
73	" 25	M	12	Ad. & Hyp. Ton.	3 "	4 "	2	3 "	No.	
74	" 25	M	17	" "	4 "	10 "	2	4 "	Yes.	Five times—Shock
75	" 26	M	19	" "	5 "	4½ "	2	3½ "	No.	
76	" 26	M	19	" "	5 "	4 "	2	4½ "	No.	
77	" 26	M	18	" "	4½ "	4 "	2	4 "	No.	
78	" 26	M	20	" "	6 "	4 "	2	3 "	No.	
79	" 26	M	13	Adenoids	4 "	3 "	2	3 "	No.	
80	" 27	F	13	"	3 "	3 "	2	2½ "	No.	
81	" 27	F	12	"	3½ "	3 "	2	2½ "	No.	
82	" 27	F	17	"	4 "	3 "	2	2½ "	No.	
83	" 27	F	15	"	3 "	4 "	2	3 "	No.	
84	" 27	F	16	"	3 "	3 "	2	3 "	No.	
85	" 27	F	17	Ad. & Hyp. Ton.	4½ "	4 "	2	3½ "	No.	
86	" 28	M	13	Adenoids	4 "	3 "	2	4 "	Yes.	Two times
87	" 28	M	20	"	3 "	3 "	2	2 "	No.	
88	" 28	M	16	Ad. & Hyp. Ton.	3 "	3 "	2	1 "	No.	
89	" 28	M	23	Adenoids	10 "	4 "	2	1 "	No.	
90	Feb. 6	F	5	Ad. & Hyp. Ton.	3 "	6 "	2	6 "	Yes.	Three times
91	" 6	F	15	Adenoids	1½ "	3 "	2	2 "	No.	
92	" 6	F	19	"	3½ "	3 "	2	1 "	Yes.	Once
93	" 7	M	14	"	2 "	3 "	2	1¼ "	No.	
94	" 7	M	13	"	3 "	3 "	2	1½ "	No.	
95	" 7	M	14	Ad. & Hyp. Ton.	5 "	4 "	2	2 "	No.	
96	" 13	M	16	Adenoids	5 "	4 "	2	4 "	No.	
97	" 13	M	16	"	6 "	3 "	2	1¾ "	No.	
98	" 13	M	14	"	3 "	3 "	2	3½ "	No.	
99	" 13	M	14	"	4 "	3 "	2		No.	
100	" 14	M	21	"	3 "	3 "	2		No.	
101	" 14	M	14	Ad. & Hyp. Ton.	3½ "	3 "	2		No.	
102	" 14	M	14	"	5 "	4 "	2	2½ "	No.	
103	" 16	M	11	Adenoids	2 "	4 "	2		No.	
104	" 16	M	18	"	1½ "	3 "	2	1¾ "	No.	
105	" 17	F	19	"	1½ "	3 "	2	1¼ "	No.	
106	" 17	F	15	"	4 "	3 "	2	1 "	Yes.	Once
107	" 20	M	13	"	3 "	4 "	2	2 "	Yes.	Three times
108	" 20	F	13	"	4 "	3 "	2	1 "	No.	
109	Mch. 27	M	11	"	6 "	3 "	2	1½ "	No.	
110	" 27	M	10	"	1 "	3 "	2	1 "	No.	
111	" 27	M	11	Ad. & Hyp. Ton.	1 "	3 "	2	1 "	No.	

These tables, compiled from cases operated on from October, 1898, to April of this year, furnish data which enable us to make definite deductions as to the reliability of this anæsthetic.

With a very few exceptions, which I shall enumerate, there was no stage of excitement, no cyanosis.

The pulse was increased in tension. Respiration quiet and regular. Unconsciousness occurred in from two to five minutes, and was determined by the absence of conjunctival reflex.

The average time for producing complete anæsthesia was about four minutes and a half. The average time under the anæsthetic was nearly four minutes. The average amount used was three drachms.

Case 1 began with mixture No. 1 and, as it had no appreciable influence in fifteen minutes, I changed to ether, and removed both hypertrophied tonsils. Half an hour elapsed before patient was conscious; vomited three times.

Case 9 required eleven minutes for anæsthesia. The mouth gag became displaced before the operation was finished, and considerable blood was swallowed, the patient vomited five times immediately following the operation.

Cases 19 to 26, inclusive, all showed some degree of stomach irritation. I used a fresh prescription of mixture No. 2 and felt that some error must have crept in in compounding it. At any rate I had another mixture prepared, and had nausea but twenty-four times in the remaining eighty-eight cases.

Case 50. Cyanosis manifested itself at the beginning of the administration of the anæsthetic. As cyanosis could not possibly result from this mixture at the beginning, though it might be questionable later on, I classed the case as one of idiosyncrasy.

The remaining cases present nothing out of the ordinary, excepting Case 73, in which adenoids and double hypertrophied tonsils were removed, and symptoms of shock followed.

In cases cited in this paper, the youngest person operated on was six years old, the oldest twenty-three years of age.

In the one hundred and ten cases, thirty-two vomited. There was no increased secretions of mucous in the respiratory tract.

Schleich's claims for his anæsthetic, in short operations, give proof of meeting every expectation and warrant us in the continued use of it. Moreover from the rapidity with which it acts, and the absence of unfavorable symptoms, it suggests itself as a most desirable anæsthetic to begin with where prolonged anæsthesia is to be used.

ADIPOSE TISSUE AN ETIOLOGIC FACTOR IN HERNIA.*

BY ALEXANDER HUGH FERGUSON, M. D., CHICAGO.

In making a study of the etiology of hernia, I was surprised to find the scant mention made of fat in the various textbooks, while the recent, and even remote literature give many examples of it as a cause of rupture. The frequency with which we meet abnormal quantities of adipose tissue in hernial regions in cadavers, and at operations on hernia, shows that more prominence should be given to it. "Fatty hernia" was known to Morgagni (1745); was fully described by Pelletan (1780); Richter, Scarpa, Sir Astley Cooper, Cloquet, etc., make mention of them; but Sutton's remarks on "Subserous Lipomata" (1890); Hutchinson's paper on "Lipomata in Hernial Regions" (1886), and Douglas on "Fat Hernia in Inguinal Region" (1890) deserve special attention. The principal literature is here appended with notes. From it I quote the following expression: "Fatty deposits diminish the abdominal cavity and hernia liable to result from intra-abdominal pressure." (Robison.)

"They (ventral herniæ) are frequently in their early stages merely a prolapse of subperitoneal fat through an opening in

*Read at the 49th Annual Meeting, Cairo, May 18, 1899.

the fibrous tissue of the linea alba." (Eccles.)

"It is also clear that as these local overgrowths of fat arise and protrude in the groin, they occasionally draw with them a pouch of peritoneum unassociated with hernia. These pouches may afterwards lodge a piece of gut and become true hernial sacs." (Sutton.)

"It may be doubtful whether most, if not all of the supposed cases of omental hernia in the linea alba away from the umbilicus are not really outgrowths of subperitoneal fat." (Hutchinson.)

"Hernia commencing in adult life is produced by double mechanism—the pressure from within of the viscera and traction caused by fatty lumps which engage themselves little by little in the rings distending them and thus predisposing to rupture." (Tillaux.)

"Lipomata in their descent draw down a process of peritoneum." (Annandale.)

"It has been recognized that a sac of peritoneum may be drawn out from cavity of abdomen and not extrude from it." (Douglas.)

In June of last year a coal-miner, aged 42 years, was referred to me to cure his ruptures. He had three of them—an epigastric, an oblique inguinal and a femoral. All three were operated upon at one time. The epigastric rupture protruded through the linea alba, and gave more inconvenience and pain than the other two. It consisted of nothing but a small mass of fat, and no sac present, so that it was not deemed necessary to open the peritoneal cavity. The inguinal and crural ruptures were complicated by abnormal accumulations of fat. In the inguinal, fat formed a collar around the neck of the sac. In the femoral the sac was a very small, slender tube, difficult to find in the center of a mass of adipose tissue, rather abundantly supplied with fibrous tissue and blood vessels. I have only operated on eight cases of epigastric hernia. They were all small fatty ones, with a sac (except the case above mentioned), and protruded through the linea alba. In six cases the primary cause could be traced to some trauma to the linea alba, followed by a protrusion of the subperitoneal adipose tissue, which was forced to assume the shape and consistency of a lipoma. This does not include a very large epigastric hernia, associated with nine other omental ventral herniæ operated on by me at Dunning Poor House. These were no doubt traumatic in origin, as she had had several abdominal sections performed on her in various hospitals in Chicago, and by different operators.

In femoral hernia in middle life I have met almost invariably with an abnormal quantity of fat surrounding the sac, or, rather, a part and parcel of it. In one case an angio-lipoma occupied the saphenous opening, simulating an irreducible hernia. I have never met with a lipoma and femoral hernia together, where the one was independent of the other. In spare, aged people and cases otherwise emaciated, the fat may become absorbed and the femoral hernia assume larger proportions. This I have seen.

In my somewhat extensive experience with operations on inguinal hernia, I do not know what percentage of cases were complicated with subserous lipomata, because in my earlier work I paid very little attention to it. Now, however, I make a systematic search for large or small accumulations of fat in this region, and usually find some to be removed. They are veiled over with a thin covering of white fibrous tissue, which must be torn or cut, and then their connection with the subperitoneal adipose layer is demonstrated. The surgeon soon learns to make a differentiation between the normal layer of fat and these accumulations. They are firm, less vascular, more or less definable from the surrounding fatty tissue and structures, and have a wide range of passive mobility. Along the deep epigastric vessels and towards the bladder, the diffused fat is so abundant, sometimes even in spare people, as to puzzle an operator of moderate experience. Too vigorous a search for lipoma must not be pursued in these two

directions, for fear of removing normal structures, and of injuring these vessels and bladder. Sometimes the sac and cord are surrounded by a uniform layer of fat. (Figs. 1 and 2.)

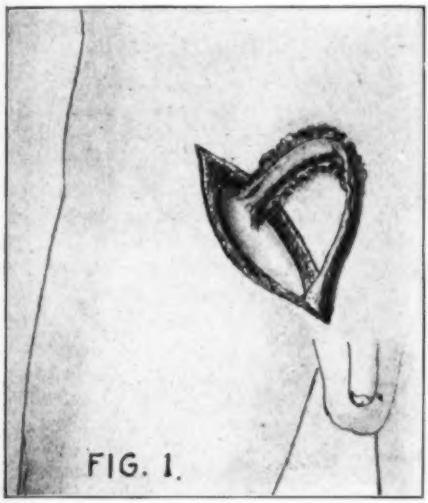
FIG. 1.

FIG. 2.

You no doubt have noticed in reports of operations on hernia the statement "no sac could be found." This is the very nature of things when the sac is not found. It is either hidden in the center of the cord, surrounded by fat, or has receded into the abdominal cavity. A hernia of this nature is difficult to be retained by a truss, and therefore it is all the more important to find the sac and obliterate it at the time of the operation, and thereby prevent a sudden return of the rupture. I have operated on five or six cases of this kind, and in three of them the peritoneal cavity had to be opened at the internal ring, the finger inserted, and the sac thus found. A sac is always present in these cases, and if not found, it is the fault of the surgeon.

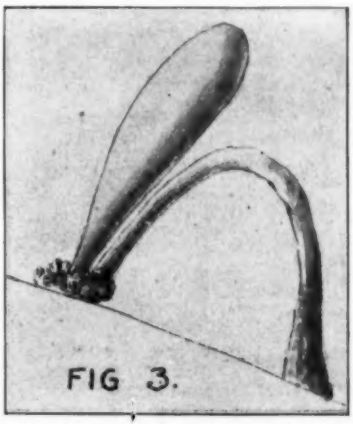
FIG 3.

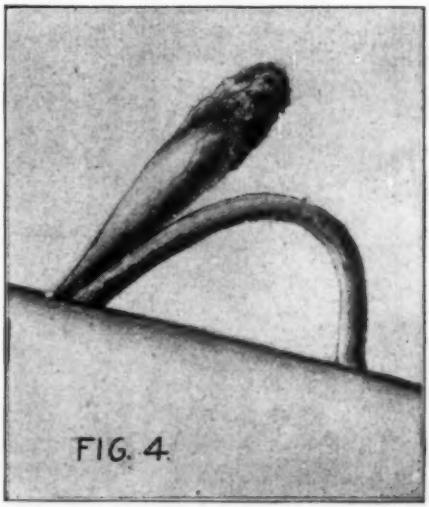
FIG. 4.

When a collar, or several collars of fat are found around the sac or sac and cord (Fig. 3), or on the fundus of the sac (Fig. 4), or in the center of the cord, it is very

probable that the adipose tissue was an important etiologic factor. The aggregation of fat is frequently found lying alongside of the sac, in front of it or between it and the cord (Fig. 5). The only true fatty hernia I ever operated on in the inguinal region is represented by Fig. 6. There was a true peritoneal sac, thin, delicate, and shut off from the peritoneal cavity by

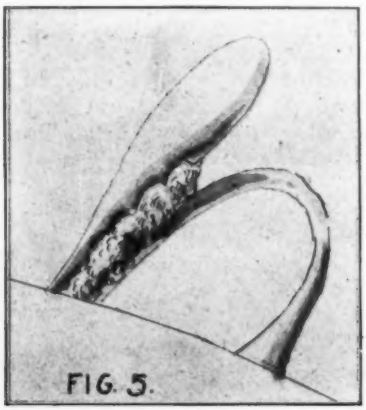

FIG. 5.

FIG. 6.

fibrous obliteration of the neck, probably due to two attempts at strangulation that had occurred. It was in a young man, 26 years of age. I have seen two cases of congenital and acquired hernia in the same inguinal region in old people. The acquired hernia in each case was complicated with a fatty mass, and situated near Poupart's ligament, above the internal ring. The herniæ which protruded through the aponeurosis of the external oblique and in Hesselback's triangle are more or less fatty. In four cases of relapse of the hernia, at the upper outer angle of the wound after an operation for the radical cure, well defined masses of fat protruded first, and soon afterwards dragged with them the peritoneal lining. It was while operating on these cases to cure the return hernia that I discovered a "congenital deficient origin of the internal oblique muscle from Poupart's ligament," and which led to an investigation of this deficient origin as a cause of hernia, as well as to the invention of my "Typical Operation for the Radical Cure of Oblique Inguinal Hernia."

The umbilical hernia not infrequently has a protrusion of subserous parietal adipose tissue alongside of it, which is a complication rather than a contributing cause. The fatty omentum found in hernial sacs is so frequently mentioned in surgical works as a contributing cause of hernia, that I wish only to mention it. The evidence which proves adipose tissue to be an etiologic factor in hernia is:

1. Its physical properties; its tendency to accumulate in spaces and cavities and then to descend.

2. Its locality and frequent accompaniment of hernia.

3. Its association with the development of certain forms of rupture. The fatty mass forming first and the true rupture following.

Small lipomata form in the openings where hernia is most liable to occur, and by intraabdominal pressure atrophy of the rings occurs; they thin out and weaken and become enlarged, and then the ball of slippery fat urged out by the *vis a tergo*, protrudes more and more, and drags the elastic peritoneum with it. If, however, the abdominal wall had no congenital deficiencies in the structures protecting the normal rings, a hernia would be rare indeed, and no accumulation of fat would be liable to take place.

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F. B. Robinson. Buf. M. & S. J., Oct., 1894.

Causes of Hernia. New theory. No. 4. Intraabdominal pressure. Fatty deposits diminish the abdominal cavity, and hernia liable to result from intraabdominal pressure.

Eccles. M. Press and Circular, March 11, 1896.

Some Cases of Hernia. Under Ventral Hernia says: "They are frequently in their earlier stages merely a prolapse of subperitoneal fat through an opening in the fibrous tissue of the linea alba."

Fenger. Ibid, 320. "Hernia of Bladder with Inguinal and Femoral Hernia."

Case I. Sac curiously folded upon itself, and found it in a diffuse lipoma, or rather, a conglommeration of adipose tissue.

Three such infoldings, and what he took for a fourth proved to be the bladder.

Bemus. N. Y. M. J., Feb. 29, 1896.

Strang. Umbilical Hernia. "Part just beneath surface of skin exceedingly tough in consistence, nearly 2 inches thick. Very deficient in circulation. Beneath this the fat must have been at least 3 inches thick. Sac had forced itself between the tendinous fibers of the linea alba. Found a second constriction within the sac—an omental adhesion."

Parker. Clin. J., July 5th, 1893.

Traumatic Hernia with Int. Obst.

Case III. Fatty tumor in left ventral region near iliac crest. Noticed at time of operation for radical cure of inguinal hernia. This said to be due to a stab received thirty years previous. Scar visible and caused him no inconvenience. After the operation (did not state how long) acute int. obst. at site of this fatty tumor. On examination, it evidently contained strangulated gut.

Was an old omental hernia of traumatic origin, situated where hernia could not occur under other conditions.

Six inches small gut with large amount of omentum found in sac between skin and abdominal muscles.

"True lipoma in inguinal region may simulate, or at least raise the question of, omental hernia. I once treated a middle-aged man for Rt. Ing. Intest. Hernia in which an inguinal lipoma existed on same side. To outer side and close to the hernia. They were obviously separated, as proved by operation, in which lipoma removed and hernia treated simultaneously."

Warbasse. Brooklyn M. & S. J., VIII, 605.

Strang. Umb. Hernia. "Attention has been called to certain small openings along linea alba for intercostal nerves and vessels. Usually they are filled with connective tissue or fat. In fleshy people they become enlarged and a loss of flesh in such persons leaves openings patulous and flabby."

"A reflection of peritoneum by internal pressure may be pressed into such an opening. These fossa are sometimes discovered in dissecting room before any visceral body has become engaged in them. Called the foci of hernia."

Southgate. Archiv. Ped., 1894, XI, 269.

"Aetiology of Hernia in Children."

Lays great stress on rickets.

Stonham. Ibid. 98-99, XIII, 21.

"In old people abdominal wall likely to become more or less pendulous and mesentery and abdomen generally become full of fat, so that intraabdominal tension is increased."

Irreducibility may be due to various causes, thickening of neck of sac, but not sufficient to strangulate. In a neglected hernia fat may develop in omentum or mesentery, and so make reduction impossible.

Teale, in his work, 1846.

"The natural openings may become enlarged from general distention of wall by pregnancy, ascites or obesity, hence these conditions may be regarded as exciting a remote influence in the production of hernia."

Russel. Intercolonical M. J., Aug. 20, 1898.

Aetiology of Hernia.

Speaks of sphincter action of the inguinal canal. "In normal person hernia impossible."

Goffe. Am. J. Obst., 1892, XXV, 818.

Woman, 36 years. Nine years before had a large lipoma removed from abdomen. It was attached to right inguinal canal and ring. It is possible that this operation weakened the structures in this region, for shortly after, the swelling was noticed at the inguinal site, and increased ever since. Thinking it a return of tumor, did not call medical aid till swelling very large. Operation revealed an inguinal omental hernia containing colon and stomach.

Bunker. St. L. M. & S. J., 1892, LXII, 149.

An Italian died of ulcerative endocarditis. During life a circumscribed fairly firm, but elastic tumor was situated on anterior surface of left thigh, over the saphenous opening. None of symptoms of hernia, and rarity of femoral hernia in male and frequency of lipoma in the subcutaneous tissue of thigh justified diagnosis of lipoma. Sometimes there is an overgrowth of the subserous fat in the neighborhood of the femoral and inguinal canals, which may be mistaken for hernia. On cutting down on this tumor at P. M., it was found to be an epiplocele. The incarcerated portion contained a notable increase of fat, and there was some condensation of the tissue where the neck of the sac had grasped. This local increase of fat from circulatory disturbance has revived the name of capsular lipoma from Virchow.

Birmingham. N. Y. M. J., 1892, LV, 577.

"Irreducible Umbilical Hernia (omental) Simulating Lipoma."

Reves. B. M. J., 1892, I, 1304.

"Large Femoral Omental Hernia Simulating a Fatty Tumor."

Diagnosis of lipoma. Operation; followed up into femoral canal, then its true nature quite plain. Distal part of omentum has lost its vascularity and resembled quite closely ordinary fatty tissue. At neck the protrusion was more vascular. "The tumor comes under the head of fatty herniæ."

Shepherd. Ann. Surg., 1892, XVI, 137.

Lumbar Hernia. Through Latissimus Dorsi, not Petit's triangle.

Subject not especially fatty. Sac contained a large epiploic appendix which protruded through opening and might have been mistaken for a fatty tumor during life.

J. Bland Sutton. B. M. J., 1890, I, 877.

Remarks on Fatty Tumors.

Subdivision—Subserous Lipomata.

Peritoneum-like skin, rests upon a bed of fat which varies considerable in different situations and individuals. Varieties: Sessile, pedunculated, diffuse.

Inguinal lipomata. Surgeons have long been aware in operating for Ing. or Fem. hernia that occasionally they come across masses of fat and find difficulty in determining whether it is omental, or a local increase of the subserous fat surrounding the hernial sac. It is now clear that in the neighborhood of femoral and inguinal canals an overgrowth of subserous fat may occur and be mistaken for hernia, and individuals have been recommended to wear, and actually have worn, trusses for fatty tumors of this character. It is also clear that as these local overgrowths of fat arise and protrude in the groin, they occasionally draw with them a pouch of peritoneum unassociated with a hernia.

These pouches may subsequently lodge a piece of gut, and become true hernial sacs. In some cases a subserous lipoma of this character will invaginate a peritoneal pouch and form a pedunculated lipoma.

Fatty tumors arising in the subperitoneal tissue occasionally make themselves evident at the ant. abd. wall, especially in neighborhood of umbilicus. They are often referred to as "fatty herniæ in the linea alba." They are often mistaken for omental hernia, and as in the case of inguinal lipomata, they sometimes produce

peritoneal pouches. This form of subserous lipoma may attain a large size, and further simulate hernia in that the traction they exercise on the peritoneum produces pain.

Diffuse subserous lipomata may attain a great size.

Hutchinson, 1888. Tr. Path. Soc. Lond, XXXIX, 451.

"Fatty Herniæ in Linea Alba."

Diagnosis of one swelling as "Fatty Hernia." Other, smaller, near umbilicus was looked upon as omental. Dissection showed that both tumors were overgrowths of subperitoneal fat which had penetrated the aponeurosis of the abd. muscle and lay in the subcutaneous connective tissue. From this they were perfectly well defined owing to difference in color, and lobulation of the two. The peritoneum opposite to each was puckered and showed small processes in the center of each extending for about an inch forwards. These small cavities, or "Potential hernial Sacs," were quite empty, but it is evident that they might have led to the formation of a true hernia. The apertures in the aponeurosis were quite small, the fatty herniæ expanding greatly as soon as they had traversed this layer.

Vomiting and pain, as symptom, often cause error of diagnosis.

Fatty herniæ in linea alba are most common in its upper part. This no doubt is accounted for by the close approximation of the recti muscles just above the pubis.

"It may be doubtful whether most, if not all, of the supposed cases of omental hernia in the linea alba away from umbilicus are not really outgrowths of subperitoneal fat, of course excluding the ventral hernia which sometimes follows abdominal section. Most of them are certainly irreducible." Even if operated upon, unless the surgeon is fully aware of the frequency of them, great difficulty may be experienced in differentiating from omental herniæ. *The diagnostic features*, absence of true peritoneal investment, and absence of any connecting investment between the lobules of fat.

Cites a case operated upon by Frederick Treves.

Supposed omental hernia in linea alba, which proved to be simply composed of fat which came through a small aperture in abdominal aponeurosis.

Hutchinson. Trans. Path. Soc. Lond, 1886, XXXVII.

"Lipomata in Hernial Regions."

Pelletan, in 1780, fully describes cases of fatty tumors in inguinal and femoral canals, and pointed out resemblance to omental hernia. Little notice of subject in English literature. He has studied two questions: (1) Do they, as a rule, originate from subperitoneal fat and travel down the inguinal or femoral canals? (2) Have they any share in producing ordinary hernia by drawing down a process of peritoneum?

Quotes Tillaux: "Hernia commencing in adult life is produced by a double mechanism—the pressure from within, of the viscera, and traction caused by fatty lumps which engage themselves little by little in the rings, distending them and thus predisposing to rupture."

In this region, if anywhere, one would expect the travelling propensity of the tumor to show itself. In nearly all cases he has dissected, found it quite easy to trace the connection with the subperitoneal fat. Cites some cases of so-called omental hernia which have been proven to be subperitoneal fat. The capsule resembles the peritoneum very closely.

Second question: "If it be granted that most of these lipomata are in their origin subperitoneal, it is only reasonable to expect that occasionally they will draw down in their descent pouches of peritoneum." Cites some cases.

Shows a specimen in which general fatty tissue was diminished, and as he gave a history of a sudden giving away, it was looked upon as an omental hernia. But operation demonstrated it to be subperitoneal. Another case femoral. Another case femoral. Case operated for strangulated femoral, and found patient had an internal obstruction.

"Lipomata of sufficient size to be detected during life are very much rarer in femoral than inguinal region; nevertheless, their occasional occurrence may lead to great difficulty of diagnosis."

Conclusions:

1. Lipomata not common in Ing. and Fem. regions.

2. Almost impossible to distinguish from omental hernia.

3. Generally originate from fat lying just outside of peritoneum, and in their descent draw down a process of that membrane.

4. Lipomata of cord, marked tendency to occur on left side.

5. Found in both stout and thin subjects, and seem frequently to depend on local hypertrophy of fat.

Lipomata in the site of Femoral Hernia.

P. Mortem, I.

Operation, III.

Diag. Hernia, I.

Cases Lipoma in Inguinal Region.

P. Mortem, 16.

Operation, 7.

Diag. Hernia, 2.

H. T. Butlin. Tr. Path. Soc. Lond., Vol. XXVI, 186.

"Fatty tumor removed from the inguinal canal during operation for hernia."

No omentum or intestine presented on dividing what he considered as the sac. The tumor was connected to some structure in interior of abdomen by thin fibrous band.

John Gay. XXIV, p. 95, Tr. Path. Soc. Lond.

Rare Form of Femoral Hernia.

"Specimen produced was a hernial pouch or sac, and close adjoining it and attached to outer surface of peritoneum a considerable piece of pendulous fat. All the symptoms of an irreducible omental hernia. (Femoral.) Operation. Turned out a large lobule of fat, which had descended through the ring and was somewhat tightly girted by its walls. *There was no hernial sac.*"

Douglas. Edinb. M. J., April, 1890. "Fat Hernia in Inguinal Region."

The chief significance of fat hernia depends upon the part they play in the production of hernia of the abdominal contents whether bowel, omentum or other organs.

Their mode of action in this respect lies in the influence exerted by them on the local resistance of the abdominal walls.

Is indebted to Prof. Branne, of Leipzig.

The stronger the tendon of the transversalis muscle is, the less liable to hernia.

If this structure be of *unequal* resisting power in different parts the disposition to hernia is increased.

This point is of importance if as I suggest, a fat hernia may cause an inequality in the resisting power of the wall.

It has been recognized that a sac of peritoneum may be drawn out from cavity of abdomen and not extended from it and to this process we shall turn our attention. This process begins in a localized increase of subperitoneal fat usually in relation to the abdominal openings, inguinal and crural canals, seeing that in three parts a natural depression exists into which fat may develop. It occurs elsewhere in the abdomen not infrequently.

The walls of the inguinal canal lie in close proximity—apposition,—a relation which the intraabdominal pressure tends to maintain. If a mass of fat is formed in the subperitoneal tissue of ext. ring, as it increases in size, it will insinuate itself in front of the well defined inner pillar of the deep abdominal ring and separate it from the anterior wall of inguinal canal.

The process thus goes on till the whole canal is occupied by the fatty protrusion which ultimately projects at the superficial ring.

As fat is increased in size it renders canal more potent by weight and by adhesions formed with the superficial tissue *the peritoneum is drawn down after it.*

There may be just a mere puckering of the membrane at first where fat is attached, which may deepen till a distinct digital depression forms. This increase in size and depth passes into and through canal

and forms a sac ready for the reception of bowel or other contents. This result is obtained by two methods.

1. Peritoneum being displaced by stretching of loose subperitoneal tissue, passes into canal by sliding on the subjacent layers.

2. Or by stretching of the membrane.

Three masses of fat often become blended with a superficial fatty layer and so escape detection during dissection.

Cites our dissection: Found a small mass of fat—subperitoneal—and attached to peritoneum in Hesselback's triangle.

Development of Direct Inguinal Hernia as follows:

1. Formation of a hollow in wall. The transversalis tendon in its weaker part yielding under the pressure of a mass of fat.

The inequality of local resisting power is thus increased.

2. Filling of this fossa by a peritoneal pouch.

3. Entrance of intestine or other contents into sac thus formed.

Some cadavers show fatty crural hernia with lipomata of linea alba.

These facts may explain the observation of Richter, Scarpa, Sir Astley Cooper and Cloquet: That individuals who become rapidly emaciated are prone to hernia.

These fatty masses in most instances attached to fundus of sac and may escape detection during operation, where attention is directed chiefly to the neck of sac.

May also be supposed that in old cases the fat, the primary cause, may have been absorbed or so altered as to escape recognition as such.

Cases where strangulated hernia are "reduced" without relieving the stricture, are frequently such cases where only the subperitoneal sac has been removed, it being mistaken for omentum.

Fatty hernia known since before Morgagni (1745), described fully by Pelletan in 1810, who claimed all could be reduced. Author does not agree.

Prof. Annandale has drawn attention to them.

Cloquet says: "Either pressure from within or traction from without are efficient cause for hernia.

Size. Annandale reports one size of orange. Usually so small as to escape detection during life.

Authors experience has dealt with one varying in size from filbert to chestnut.

"Yet they formed a series illustrating very clearly the early stage of the process and mode of development of a true hernia as a sequel to it.

Lockwood. Tr. Path. Soc. Lond., XL, 115.

A ventral hernia formed by the protrusion of an appendix epiploica through the linea semilunaris. First considered as a subperitoneal lipoma.

"Its origin seems quite inexplicable."

F. J. Lutz. St. Louis M. & S. J., Feb., 1889.

"Fatty Tumor complicating Femoral Hernia."

A subperitoneal fatty tumor of hernial sac. Microscopic difference between tumor and omentum. In omentum fat arranged characteristically around the blood vessels.

A. P. Dudley. Am. J. Obst., 1890, XXVIII, 528.

Strangulated Ventral Hernia, woman 90 years old, weighing over 200 pounds.

This woman had been operated upon once before for Strangulated Femoral Hernia.

Thomas. Lancet, 1889, II, 1224.

"Extra peritoneal Fat Simulating Hernia."

A case met in dissecting room.

Smith. Lancet, 1890, I, 1013.

"Umbilical Hernia."

Supposed to be an omental hernia in upper part of linea alba in a male.

On operating, was found to be a mass of subperitoneal fat, resembling omentum but had *no peritoneal sac*. Mass continuous with subserous fat by a pedicle which passed through small orifice in linea alba.

Relief of all symptoms followed removal and closure of opening in linea alba.

Rodgers. Pitt. Med. Rev., 1893, VII, 298.

"A case of Ventral Hernia."

Opened adbomen, found omentum adherent to margins of hernial sac. Detached omentum and returned it. Then dissected away a large amount of adipose and fibrous tissue.

King. Int. M. Mag., 1893, II, 701.

"Umbilical Hernia."

Due to pregnancy, tumors, ascites and obesity.

May be caused by direct pressure or by subsequent sudden relaxation of over stretched tissues as occurs after parturition and after rapid reduction of corpulency, as in tuberculosis and other diseases.

SURGICAL TREATMENT OF HEMORRHAGE FROM GASTRIC ULCERS, WITH REPORTS OF TWO CASES AND ANIMAL EXPERIMENTS.*

BY E. WYLLYS ANDREWS, A. M., M. D., AND DANIEL N. EISENDRATH, A. M., M. D., CHICAGO.

1. History. The first surgeon to resort to operative interference in the treatment of hæmatemesis from round ulcer of the stomach was Mikulicz,[1] who in 1887 operated upon a patient in whom he had diagnosed a probable ulcer of the pylorus. Upon opening the stomach he found a stenosis of the pylorus, which he divided longitudinally. He found an ulcer which, being unable to extirpate, he cauterized. The patient died after 50 hours without recurrence of hemorrhage. The next operation was by Mixter,[2] who operated upon a case of Gannett's in which there had been recurrent hæmatemesis for three years. He did not find the ulcer. The patient dying, the autopsy showed an ulcer of the posterior wall with a double perforation of the pancreatico-duodenal artery. In 1889 Salzer[3] operated upon a case in Billroth's clinic in which he also failed to find the ulcer. In 1892 Doyen[4] performed gastro-enterostomy for an ulcer of the pylorus, with recovery. In 1893 Roux,[5] of Lausanne, at the French Surgical Congress reported two cases, in one of which he ligated the bleeding artery and then excised the ulcer, and in the other ligated the artery at the two ends of the lesser curvature without resection of the ulcer. Both recovered without recurrence of hemorrhage. In the same year Guinard[6] performed gastro-enterostomy for hemorrhagic pyloric ulcer with recovery. In 1894 Küster,[7] of Marburg, reported two cases in which he cauterized the ulcers. In both on account of a pyloric stenosis he did a gastro-enterostomy, the patients recovering without further hemorrhage. In the same year (1894) Curtis[7a] performed a pyloro-plastic operation through ulcer floor with recovery. In 1895 Elliott and Cutler[8] operated upon a patient with repeated hemorrhages by resection of the pylorus, the patient dying upon the fourth day. Hartman,[9] in the same year, performed a gastro-enterostomy with fatal outcome for the same condition. Hirsch,[10] in 1896, found no ulcer after an exploratory gastrostomy, although there had been frequent hemorrhages. Abbe,[11] in 1896, had a similar experience. In the former case the patient improved, in the latter, died. Körte,[12] in 1897, reported a case at the German Surgical Congress in which he had used the cautery on a bleeding gastric ulcer, which could not be extirpated. The patient died eight days after operation, the autopsy revealing an ulceration of the splenic artery. At the same time Mikulicz[13] reported two cases which he had operated in 1894, in one of which he resected the ulcer with no recurrence of hemorrhages for three years. In a second, in which he cauterized the ulcer, the patient died the same evening. In 1897 Michaux[14] operated after four severe hemorrhages during the preceding week. He could not find the ulcer. The hemorrhage recurred and the patient died. At the autopsy an ulcer the size of a 2 franc piece was found involving only the mucosa, near the lesser curvature with ulceration of an arteriole. Cain[15] reports in 1897 a case in which four erosions were

*Read at the 49th Annual Meeting, Cairo, May 18, 1899.

found. He sutured them with catgut. The patient recovered without further hemorrhages. Tuffier[16] in the same year performed a gastro-enterostomy for an ulcer near the pylorus with hemorrhages, the patient recovering. In 1898, E. W. Andrews operated two cases of gastric ulcer with recurrent hæmatemesis which will be the subject of this paper. At the German Surgical Congress held last month (1899), König, Jr.,[17] of Berlin, reports a case of resection of the stomach for gastric ulcer with continued hæmatemesis. The ulcer was situated near the pylorus, but the operator only removed the source. The resulting cicatrix caused obstruction and a secondary gastro-intestinal anastomosis was necessary.

2. Clinical Forms of Hemorrhage. Clinically we have three forms of hemorrhage for gastric ulcers. 1. Foudroyant, in which death occurs in a few minutes. 2. Acute, in which there may be recurrent hemorrhages varying from 500 to 1000 grammes. The syncope which follows causes decreased cardiac action, decrease of blood pressure and spontaneous cessation of hemorrhage. 3. Chronic form in which there are small frequently recurring hemorrhages often associated with pyloric stenosis.

3. Source of Fatal Hemorrhage. This is usually from an artery, although in four cases described by Savariaud[16] a venous hemorrhage was the cause of death. In considering arterial sources, they may be either from the stomach walls, which is the more frequent, or from one of the vessels adjacent to the viscus. In forty-seven cases the source was the splenic in seventeen, the coronary in six and arterioles in ten. Other vessels such as the aorta and even the heart may be perforated. (See table below.) There is usually an oval perforation of the side of the vessel, but the latter may be eaten straight across. At times when the source of hemorrhage cannot be found, it may have been capillary.

4. Duration of Hemorrhage. This means the time between its occurrence and its ending in either syncope or death. We may divide them into sudden death, rapid death and death after an interval, as shown in the following table compiled by Savariaud, who in his thesis published last year has written the most elaborate and thorough article on this subject.

Vessels.	Number.	Immediate Death.	Rapid Death.	Death after longer time.
Heart	4	1	1	2 (3 days)
Aorta	2	1	1	1 (10 ")
Hepatic	2	1	1	1 (10 ")
Splenic	17	3	7	7 (2 to 18)
Coronary	6	1	3	2 . . . . .
Pancreatico-Duodenal	6	1	3	2 (8 & 15)
Arterioles	10	1	1	8 (4 & 15)
Little Veins	4	1	1	2 (7 & 11)
Invisible Vessels	3	2	1	1 (21 days)

Sudden death may be the result of microscopic ulcerations and at times there seems to be no relation between the calibre of the blood vessel and amount of hemorrhage, hence it is frequently difficult to estimate the size of the blood-vessel from the quantity of blood.

5. Varieties of Ulcers. The most frequent is the so-called ulcer of Cruveilhier, or simple ulcer, which may be met with in three stages, recent, cicatrizing or beginning. As regards size, there are also three kinds; large, size of dollar, medium, size of quarter, and small, size of dime. These generally ulcerate down to blood vessels of submucosa. They are met most frequently on the lesser curvature according to Welch, and especially on the posterior wall, as the following table shows:

Welch's table of location:

Lesser Curvature,	288 (36.3%)
Posterior Wall,	235 (29.6%)
Pylorus,	95 (12 %)
Anterior Wall,	69 (9.7%)
Cardia,	50 (6.3%)
Fundus,	29 (3.7%)
Greater Curvature,	27 (3.4%)

Van Valzah & Nisbet:

Anterior Wall,	923
All other locations,	425

Greiss & Cohn (Dissert. aus. d. path. Inst. in Keil) state that only two per cent in posterior wall perforate, and eighty-five per cent in anterior wall.

They may be multiple, and when so quite distant from each other. When these ulcers extend beyond the submucosa into the muscularis and serosa, they produce perigastric adhesion, induration of stomach walls and may gradually perforate one of the perigastric vessels. Hemorrhage may occur from simple erosions of the mucosa and at times we may have very superficial ulcerations (exulceratio simplex of Dieulafoy). About twelve of these have been observed. These affect the arterioles of the submucosa and may at times cause a fatal hemorrhage. They are so superficial that at times it is necessary to use a lens to see them.

6. Clinical History. The patients may be divided into three classes. 1st. Those who have had characteristic symptoms, e. g. pain, vomiting, hemorrhages and emaciation. 2nd. In addition to these symptoms, those of pyloric stenosis. 3rd. Those in whom the ulcers have been latent (this constitutes the history in one out of five cases). In these there are no previous attacks of gastralgia, etc., but suddenly patients who have previously enjoyed good health have a violent hæmatemesis.

7. Diagnosis. This can be made from the previous history of pain in epigastrium increased by food. Vomiting and history of previous hemorrhages are found in some cases, but in others, when a previously healthy person has a sudden hemorrhage, the diagnosis is puzzling. A differentiation must then be made from rupture of aneurism into stomach, of esophageal varices (frequent in hepatic cirrhosis), also from perforation of hepatic artery and portal vein by biliary calculi, and from miliary aneurisms of stomach, as well as hemoptysis, nasal hemorrhage and that caused by carcinoma, by syphilitic and tubercular ulcers of the stomach. The diagnosis of the seat of the ulcer from the location of the pain is not to be relied upon. We can only differentiate the hemorrhage caused by ulcer from that due to hemorrhage erosions or ulcerative gastritis by the rarity of the latter. It is also impossible to diagnose the size of the eroded vessel from the quantity of blood lost at a single time. A small arteriole can gradually cause as much loss as an ulceration of the splenic.

8. Mortality from Hemorrhage. The average number of deaths due to hemorrhage is five in a hundred cases of gastric ulcer. Some authors have a small percentage, e. g. Leube,[18] only 1.1%; Müller,[19] in 127 ulcers, noted hemorrhage 37 times, of whom 14 died, or 11%, so that the maximum is the latter (11%), the minimum the former (Leube's) 1.1%.

9. Indications for Surgical Interference. Gastrorrhagia belongs to the surgical domain after medical treatment has been given a fair trial without success. The indications for operations on gastric ulcers laid down by Leube[19] at the German Surgical Congress, 1897, are: 1st. Moderate recurrent bleeding (single profuse hemorrhage not an indication). 2nd. Severe pain and obstinate vomiting, resisting medical treatment. 3rd. Perforation.

Kocher,[16] in a very recent paper, confirms Leube's statements and adds that it is well to interfere before the patient is exhausted by repeated hemorrhages or excessive gastric trouble. He considers surgical intereference "a refuge but not a last refuge." Kocher advocates excision for hemorrhage, gastro-enterostomy or pyloroplasty for inaccessible ulcers or great distensions. Suture methods rather than mechanical devices, such as plates or buttons are his preference.

According to Dieulafoy, if a patient vomit 50-200cc. of blood he will recover spontaneously, but if one-half litre or more is vomited, especially if this be repeated once or twice, such a patient will die if not helped by operation.

These cases show that an important vessel has been opened, probably parietally, so as to be unfavorable for spontaneous closure. It is difficult to estimate the quan-

tity of blood lost accurately as some may have passed into the bowels.

These conclusions fairly represent the attitude of conservative surgeons and show a growing tendency to make the disease a surgical one. As a majority of the fatal results have been from shock and exhaustion, it is certain that early interference will reduce the mortality. While it is true that the manipulations in exploring and operating upon the inner wall of a hollow viscus present formidable difficulties, we feel warranted in claiming that, with fair dexterity and a carefully elaborated technique, bleeding ulcers may be searched for, found, and extirpated with comparatively little danger.

The shock element in gastric surgery is less important than has been assumed by some writers. Thus the supposition by Willoughby Furner,[17] that the proximity of the solar plexus to the posterior wall causes sudden "heart failure" is hypothesis rather than pathological fact. We find in actual practice that the impression made upon the sympathetic system is less profound in stomach operations than in the intestine. This may be explained partly by the fact that the stomach is easily located, and promiscuous handling of viscera is avoided, and partly by the fact that its walls are thicker, stronger and less liable to be injured by palpation, the use of hooks, clamps, etc., than the bowel wall. Nevertheless, certain obstacles to success must be considered as constant. Among these are (1) previous state of exhaustion; (2) difficulty of finding the ulcer, as when it is in the cardiac end or in the duodenum, or is very small; (3) location of the ulcer on posterior wall with strong adhesions to pancreas; (4) erosion of vessels not connected to stomach wall, such as splenic artery, vena porta, hepatic artery, etc. These various difficulties will be considered in detail.

10. Methods of Operating. As to the best manner of dealing with the ulcer itself or its bleeding vessel, it may be said that excision is ideal, but is far from being practicable in all cases. In the anterior and posterior wall and greater and lesser curvatures, it is easy except when adhesions, as to the pancreas, prevent access. Near the pylorus, it is practicable with gastro-enterostomy or without it. Pyloroplasty may be done through the floor of a bleeding ulcer. At the cardiac end of the stomach it is difficult or impossible to gain proper access for performing an excision properly.

Cauterizing the ulcer, as practiced by Küster,[18] seems to have been successful in several cases. No reliance is to be placed upon the cautery in checking hemorrhage from very large vessels, such as the splenic, coronary, etc.

Proximal ligature of a large trunk may be considered more scientific. Roux in two cases successfully ligated the arteries of the lesser curvature. Savariaud advises on theoretical grounds ligation of vessels of both lesser and greater curvature in cases where the ulcer cannot be found. We consider that the danger of possible gangrene of a segment of stomach wall, is suggested by the frequent occurrence of this accident in the intestines. In the latter great care has to be used not to injure the afferent branches. In the thicker stomach wall the danger of sloughing from anemia may be less, but we do not know that it is altogether absent.

Another suggestion by this writer is that the ulcer be curetted (grattage) with the expectation that the vessel or vessels will then bleed, when they may be caught up and ligated. Should the scraping process perforate the stomach wall, the conditions are favorable for closing the opening.

Ligation of the small areas of eroded mucous membrane has been practiced by Cazin.[14] Catgut ligatures were thrown around several bleeding points and recovery followed.

Finally, we desire to call attention to a method employed in two cases with success, consisting of the ligation *en masse* of the stomach wall drawn up into a cone including all its coats. This was done in the first instance because of adhesions to

the pancreas preventing easy access to the posterior wall, and in the second case rather from choice, there being several ulcers to remove. Immediately on returning the first patient to bed an anxiety was felt lest the rapid digestion by the stomach secretions should remove the mass beyond the ligature before firm closure of the vessels.

A series of experiments on living animals was then made to test the durability of the ligature and stump, a description of which will be found below.

11. Technique of Operations for Hemorrhage. Lavage of the stomach, favorably spoken of by some writers, should be avoided, as it may provoke new hemorrhage. The previous light diet of the patient will ensure a collapsed condition of the viscus. The horizontal rather than the Trendelenburg position should be chosen, although it is true that in the latter the liver requires less retraction in certain cases. Savariaud advises a bending of the trunk by pillows placed beneath the hips and shoulders to relax the anterior abdominal wall. As the location of the ulcer is usually unknown, the abdomen should be opened in the linea alba, and in a majority of cases this should be of ample length, reaching to the umbilicus. Lateral incisions can be used if special circumstances demand them. Adhesions from plastic peritonitis may cause delay in uncovering the stomach wall. These should be divided with great care and especial attention given to hemostasis. The stomach is easily distinguished from the transverse colon by its peculiar arrangement of vessels. Its anterior wall should be seized and, so far as possible, drawn into the abdominal wound and held by compress sponges in such manner as to wall off the general peritoneum. Inspection and palpation of the external surface should now be made in a systematic manner in order, if possible, to determine the location of the ulcer from without.

Keen[21] states that the peritoneal coat is sometimes marked by an indurated and discolored spot opposite the ulcer. Other observers speak of finding opposite the site of the ulcer cicatricial thickening with the peritoneum drawn into radiating folds. Such guides would be of great value to the operator as the time saved in exploring the interior would be considerable and, probably, one incision would suffice for the excision and exploration. It is not to be assumed, however, that this explanation should be omitted even when an ulcer is found anteriorly. On the contrary, a considerable number of cases present two ulcers symmetrically located on anterior and posterior walls. Thus R. Steele[22] reports an unsuccessful case of gastrostomy in which the autopsy showed that a second ulcer in the posterior wall had been overlooked.

This condition of double ulcer is stated by Furner to be present in 13 per cent of cases, the posterior one, being usually adherent to pancreas and tending to perforate and cause hemorrhage, is the more important. The posterior wall should now be examined from without by the hand passed through an opening made in the greater omentum. This position of the hand also is advised as an aid to the internal inspection later on. In palpating the pylorus it is to be remembered that inflammatory or cicatrical thickening may cause a sensation not unlike that of carcinoma. The normal ring-like feeling of the duodenum should also be familiar to the operator. If no external guide to the location of the ulcer is found by inspection or palpation, the organ must be laid open by a vertical incision 6-12 cm. long between the branches of the coronary artery. Savariaud[16] advises that these vessels be ignored, and that a horizontal incision be made 8 cm. in length midway between the greater and lesser curvatures. Doubtless the vessels in this case could be seen and ligated easily before division, as they always lie pulsating in plain view just beneath the peritoneum. This writer's conclusions are based upon cadaver experiments, while our own rest upon experience with the living human subject and animal experiments. We cannot but think that he underestimates the difficulties and de-

lays which would arise from long horizontal incisions, due to hemorrhage. It is certain, however, that the horizontal incision is the more favorable for examining the two ends of the viscus from within, especially the pyloric end.

Before opening the stomach, if it is much distended with gas or fluid, the surplus may be drawn off by a tube and trocar. After opening, the toilet of the interior should be continued by careful sponging with absorbent pledgets, care being taken that none of these are allowed to infect the laparotomy sponges. It is safer to have a specified number of small tampons set aside for this purpose of such shape that they cannot be mistaken for ordinary sponges. These can be accounted for separately after the operation. The large napkins placed exterior to the stomach must not be removed until the incision in its anterior wall has been closed. The opening in the greater omentum for gaining access to the posterior wall must therefore be left so as to be accessible without disturbing them. The more the whole organ can be drawn outside the abdominal wall the safer the operation becomes, as the danger from handling and contact with the air is much less than that from infecting other viscera by contact with the mucous lining. In practice a large portion of the anterior wall can usually be brought outside, so that by careful use of pads the operation becomes for the time almost extraperitoneal. In case of numerous adhesions, this is not easily done and the abdominal incision may have to be correspondingly larger. The search for the ulcer must now be carried on systematically by inspection of mucous lining assisted by palpation. Strong light is essential and the aid of a small electric lamp and reflector is advisable. Dieulafoy advises the use of a lens.

In our first operation the stomach was explored by drawing up successive portions of the mucous surface with forceps, inspecting them through the anterior incision and then allowing them to return. In this way an ulcer was found located on the posterior wall. This method has the disadvantage of leaving small lacerations where the volsella have grasped the mucous membrane, which bleeds slightly and may be mistaken for ulcers. The membrane tears very easily into ribbons if the forceps slip. With the exception of the pylorus, the lining of the stomach is best examined without being touched by instruments. The pylorus, or even a small portion of the duodenum, may be invaginated and drawn up with forceps thrust into it. The examination of the duodenum by palpation alone is not infallible, as recent ulcers do not produce much induration. Passing from the pylorus toward the left nearly the whole interior of the stomach may now be inspected by the following maneuvre: The hand is passed behind the organ through the opening in the omentum already mentioned. The posterior wall is now pushed forward into the opening and passed portion by portion into plain view. This may be continued until the whole posterior wall nearly to the cardiac end has been gone over. The greater and lesser curvatures and the remainder of the anterior wall may in the same manner be caused to invert and pass in review beneath the opening, the latter being caused by traction to assume various positions to assist in this invagination. Should the posterior wall be adherent to the pancreas, as in Case 1, and somewhat immovable, that particular part of the viscus should be inspected by reflected light. In such a case the lesser peritoneum should be opened, which will give additional access to the posterior wall.

We now come to a portion of the stomach interior which cannot be drawn down or forward, namely, the cardiac end where covered by the left lobe of the liver and attached to the diaphragm. To inspect these parts it is necessary to illuminate the cavity and retract the liver and costal arch. The Trendelenburg position would probably be of assistance at this stage, both in gaining access and in the matter of illumination. With care a good view can be obtained of the whole cardiac end and opening.

The search for ulcers should be prosecuted systematically, and in our opinion should be in the following order:

1. Anterior and posterior walls, and greater and lesser curvatures.
2. Pylorus and duodenum.
3. Cardiac end.

This is based on the order of frequency, as shown by the statistics of Welch quoted above.

It is obvious as but 12 per cent are at the pylorus and 6 per cent at the cardiac end, that the two ends may be examined last. We may even omit the examination of the stomach orifices after having found one ulcer in the middle portion without great risk of overlooking a second. We advise, however, that the pylorus be not passed by except where the time element is very important, since pyloric ulcers and their sequelæ in the form of stenosis are not uncommon.

In our second case a stenosis of the pylorus, probably, existed at the time of the first operation. It could have been remedied by a pyloroplasty with slight additional risk.

Before speaking of the actual treatment of the ulcer it may be well to consider the problem presented by the failure to find any ulcer or source of hemorrhage. The ulcer may be concealed beyond the pylorus in the duodenum, in such a case, and gastro-enterostomy or pyloroplasty may be unavoidable. The invagination of the duodenum is practicable for a distance of 4 or 5 cm., within which distance, according to Colin,[20] 92 per cent of duodenal ulcers are found. The Loreta operation of digital divulsion of the stenosed or normal pylorus is to be advised as an aid to exploration.

12. Treatment of the Ulcer when Found. Excision. The ideal treatment of the ulcer when found is unquestionably excision. The afferent vessels are in this method divided and can be secured before the sutures are applied. In the central portions of the stomach, where both mucous and peritoneal surfaces are accessible, an elliptical piece of the wall, including the ulcer, can be removed, and the wound closed by double or triple lines of suture with the utmost security. It is doubtful whether excision from the mucous side alone without access to the outer wall, so as to place a Lembert suture, is safe against leakage. When the posterior wall is adherent to the pancreas and the ulcer has penetrated its substance, it may be assumed that the bleeding vessel is the splenic artery. When at the pylorus it is the pancreatico-duodenal. In the cardiac end the ulcer is also inaccessible except from the mucous surface.

Cautery. In all these locations we may resort to the Küster method of actual cautery. The smallest Paquelin point is well shaped for this purpose. Küster adds gastro-enterostomy to the cauterization with a view to removing the cause of the disease. The cautery has the merit of prompt and positive closure of small vessels, but is not to be depended upon for sealing large arteries such as the coronaries or splenic. The exact state of the ulcer after separation of the slough, whether it show a tendency to better healing is not known. The possibility that the cautery might lead to perforation in an ulcer already deep, ought seriously to be considered. This seems to us a real danger. Should the eschar involve the whole thickness of the stomach wall, peritoneal adhesions would form rapidly around it which, before the time of separation, might prevent leakage.

Curetting. Ulcers situated unfavorably for excision may be denuded with a curette. Should this reopen a bleeding point, the conditions are favorable for the application of forceps and ligature. The hemorrhage thus started might, however, be difficult to check if the tissues were friable, or if it came from a deep source such as a perforation in the pancreas.

Ligature of Mucous Membrane. Dieulafoy[22] and Colin[20] have advocated in what is termed by the former "exulceratio simplex," causing superficial erosion, that the bleeding spots be tied up in loops with their underlying mucosa.

Ligature En Masse of all Coats of the Stomach from Within. This method was used tentatively in Dr. Andrews' first operation, and more or less deliberately in Case 2. Dr. Eisendrath then suggested that the value of the method be tested by animal experiments, and a number of these operations were performed to settle the question of the durability of the ligated mass, the danger of perforation, rapidity of healing, and most advantageous technique. These will be spoken of shortly.

13. Operations on the Human Subject. Case I. Mrs. F. H., aged 38. Family history negative. Had borne nine children, seven living. Has had six miscarriages without serious consequences. Never has been ill otherwise. Present trouble existed two years. Has had constant boring pain located beneath xiphoid cartilage greatly increased at times by ingestion of solid food. Appetite poor. For the preceding two months has been able to use only liquid food.

May 28, 1898, Dr. W. W. McCleary was called to see the patient, who was in collapse from sudden profuse gastric hemorrhage. This amounted to a litre (estimated) of dark blood and patient became unconscious for a few moments. A sensation described as gurgling was felt at the time. The following day another profuse hemorrhage occurred producing faintness and prostration, but no loss of consciousness. Dr. E. Wyllys Andrews in consultation with Dr. McCleary advised immediate removal to the Michael Reese Hospital, where patient was taken same day for operation. The condition was then one of extreme prostration from anemia, with characteristic pallor, weak pulse, and cold, relaxed skin.

Operation. Gastrotomy by Dr. Andrews, assisted by Dr. McCleary and Dr. Schram, May 30th, 1898. Abdomen incised from xiphoid cartilage to umbilicus. Parietal peritoneum anchored to skin by temporary sutures. The anterior wall of the stomach was then drawn into the field, isolated by sponges and incised vertically, 8 to 10 cm. Bleeding vessels in the stomach wall were secured. Stomach explored by inspection, the greater and lesser curvatures and posterior wall being drawn up with forceps and examined stey by step until the ulcer was found opposite the opening on the posterior wall. This was round, 12 m.m. in diameter, and deeply eroded. Its floor was formed by grayish necrotic tissue. Probably this was gland tissue of the pancreas to which the stomach wall seemed adherent. The posterior wall could not be drawn up freely, but was lifted somewhat and the question of excision decided in the negative. This decision was based upon the idea that a suture placed from within could not be made secure against leakage. It was thought that the extravasation, even if not into the free peritoneum, would be as disastrous in the end from burrowing and sepsis. The ulcer was drawn forcibly forward so as to form the apex of a cone around the base of which a strong ligature was tied. Just what tissues this included could not be ascertained, but certainly all the coats of the stomach. The anterior wall was then closed by Czerny-Lembert suture, and the laparotomy finished in the usual way.

This patient made a rapid recovery and has remained well, as reported by Dr. McCleary, up to the present time.

Case II. C. L., male, aged 36. Patient had suffered for several years from cardialgia and nausea. Dr. A. H. Wales, who saw him July 5, 1898, made a diagnosis of gastric ulcer and referred him to Dr. Frank S. Johnson. The day preceding he had a profuse gastric hemorrhage. He was put upon nutritive enemata containing spirits frumenti and eggs and milk peptonized. This treatment with occasionally milk and lime water by the stomach was continued about two months. Gastric pain was a constant symptom during the summer and emesis was rather frequent. September 16, the stomach was washed out after a test breakfast. Laboratory report showed a large amount of mucus, free hydrochloric acid, and no

organic acids. A second washing September 18th was identical.

September 22. Patient still complained of gastric pain, and at 5 P. M., after ingesting a small amount of milk, had a severe hemorrhage about 800-1000 c.c. of nearly fresh blood. Dr. Johnson referred the case to Dr. Andrews, who performed gastrotomy April 26th, with the assistance of Dr. Eisendrath and Dr. McCleary. The abdomen was incised from sternum nearly to umbilicus. No adhesions found. Anterior wall drawn forward, isolated by sponges and incised vertically at middle, 8 c.m. Systematic exploration revealed one considerable erosion on posterior wall, size 1 c.m. This scarcely penetrated below the mucous membrane and bled on handling, but not profusely. Similar but smaller erosions were found at three other points, one posterior, and two on anterior wall. These caused no perceptible thickening on peritoneal side. All these points were ligated off with large silk and the stomach wall united as in Case I.

This patient was thoroughly exsanguinated before the operation, but suffered no unusual prostration as a result of it. Saline solution was used by rectum only, and rectal feeding continued for two weeks, when small amounts of milk were given. He continued to suffer from gastralgia until he left the hospital, November 3rd, 1898.

Blood examination the day of operation, September 26th, showed red corpuscles, 900,000=18 per cent.

September 29th, showed red corpuscles 1,200,000=24 per cent. Hemoglobin, 15 per cent. October 3rd. Red corpuscles 1,400,000=28 per cent. Hemoglobin, 17 per cent.

Patient passed later to the care of Dr. Otto Schmidt at Alexian Hospital, who reported no further hemorrhages. He continued, however, to suffer from gastralgia and dilated stomach, which resisted all treatment. February, 1899, he underwent an operation for gastro-enterorrhaphy by the button. This was performed by Dr. E. H. Lee, of the surgical staff, Dr. Andrews being present and examing the pylorus, which seemed contracted by internal cicatrices. Patient did well for one week, but died at the end of that time in collapse from general peritonitis. The autopsy showed failure of union at the point of approximation, causing leakage of stomach or bowel contents.

14. Experiments on Dogs. In order to confirm the value of this method expermentally, the operation as it had been performed upon two human beings, was repeated upon 9 dogs. The technique of the operation was alike in all. An incision was made in the median line after the usual disinfection of the abdomen; the peritoneal cavity opened and stomach pulled out. An incision about 8 c.m. in length was made in the anterior wall about midway between the greater and lesser curvature, and an equal distance from cardia and pylorus. In those dogs in whom two areas were ligated, two portions of mucous membrane were snipped off with scissors to resemble in some degree an ulcer as it occurs in the human subject. This was merely from an anatomical standpoint, in order to test the value of the method for ulcers situated at different parts of the stomach, it being impossible to imitate the exact pathological conditions found in the human subject. After ligating such an area, as shown in the drawings, which was done by pushing up such a hypothetical ulcerated surface, with the finger inserted on the serous surface, strong silk was used as the ligature material, the deligated cone, which included all of the coats of the stomach, rapidly became of a dark blackish color and sharply demarkated from the surrounding mucosa. On the serous surface, a distinct depression was visible, corresponding to the area which had been invaginated. This puckered up depressed area was closed by serous sutures. Our reason for having the latter as part of our uniform method will be shown later. After varying intervals of time the dogs were killed. The first dog operated upon was killed one and a half days after the operation. The deli-

gated areas were readily found on the anterior and posterior walls, one place in each having been selected at the time of the operation. The serous sutures were covered by a perfect plastic lymph. There were no evidences of peritonitis. Examination of the deligated areas themselves, after opening the stomach, showed that no digestion of the same had taken place. There was a sharp demarkation between the invaginated portion, at the summit of which was an ulcer, and the surrounding mucous membrane. Sections examined microscopically showed that the ligated portion no longer took the stain and there had been some hemorrhage into the various tunics of the stomach which had been thus cut off from their nutrition. Near the ligature the vessels of the submucosa were thrombosed and the tissues around it again took the stain.

The second dog was killed after three days. In this the condition was about the same, except that the invaginated portion was softer. In a dog, killed four days after operation, in place of the deligated masses, there were ulcers in the mucous membrane about the size of a quarter, with rather sharp edges, and the floor covered with mucous and stomach contents. On section of the stomach wall this floor was seen to be formed by the muscularis and serosa. Microscopically these ulcers resembled completely recent ulcers as found in the human stomach. The upper layers of the muscularis and of the remaining submucosa were densely infiltrated with round cells. The blood vessels were filled with thrombi.

A fourth dog was killed eleven days after operation. The condition found on examination of the interior of the stomach was about the same as in the fourth day dog, but differed microscopically in the fact that the round cells were being replaced by granulation tissue and the thrombi beginning to be organized. In both of the latter dogs there was considerable thicking of the peritoneum, but no adhesions to surrounding viscera. In the eighteen day dog, that is, one which was killed eighteen days after operation, the ulcers could be distinctly seen. The walls of the stomach, which formed the floor, were thicker than the surrounding portions, and on microscopical examination it was evident that cicatrization of the same was beginning. The edges were firm and contracted. Externally there was no evidence of any puckering-in of the serosa, simply a line of organizing plastic lymph covering the Lembert sutures.

The seventh dog, killed thirty days after operation, showed both on the anterior and posterior walls internally, corresponding to the deligated areas ulcerations of the same character as those just described, resembling those seen clinically in the human being. A loop of the Lembert suture presented in the bottom of one of the ulcers; the serosa on the external surface was continuous in both, hiding all stitches. The edges of the ulcer were also firmly contracted, and there was evident thickening of the stomach wall over the ulcer.

None of the above dogs showed any signs of peritonitis, and had no hemorrhages, showing that the thrombosis beneath the deligated masses had been sufficient to prevent any hemorrhage.

In all of the dogs thus far spoken of, the method of picking up and tying off the entire thickness of the stomach wall about half an inch from the edge of the ulcer and reinforcing this with a row of Lembert sutures on the serous side was uniformly used. Between the third and fourth dog, two dogs were operated upon, both of which showed the necessity of using these reinforcing sutures. In one dog death occurred on the fourth day after operation from a perforative peritonitis, the gastric juice having apparently digested off the ligated area and caused a perforation in the stomach wall corresponding in size to this area with a resulting perforative peritonitis.

In a second dog, also operated upon without reinforcing serous (Lembert) sutures, the animal was killed upon the fourth day, and it was found that a perforation similar to the one just described was be-

ginning and unquestionably would have caused death within a short time.

15. Conclusions. 1. The result of the practice of the best modern surgeons warrants the statements previously made on theoretical grounds that only operative interference can save the lives of a part of the patients affected with bleeding ulcers of the stomach, viz., those not improved by internal medicine.

2nd. Surgical intervention is to be recommended firstly in small repeated hemorrhages, secondly in severe ones, occurring more than once, especially if more than 500 c.c. is lost at each hæmatemesis.

3rd. A single copious hemorrhage is not necessarily an indication for operation.

4th. In the ulcers at or near the pylorus, pyloroplasty (Heineke-Mikulicz) is ideal. It makes local treatment possible and gives all of the benefits of gastro-enterostomy and is safer.

5th. Cauterization and curetting of the ulcer should give place to resection wherever the stomach-wall can be reached from without.

6th. If adherent posteriorly and at ends of stomach, cauterization, curettement and ligature *en masse* are best substitutes for excision.

7th. Ligature *en masse* is shown by our experiments to endanger perforation, except when supported by external sutures.

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THE INFLUENCE OF BIOLOGICAL RESEARCH ON SURGERY AND MEDICINE.*

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Every man who takes up the study of medicine from the highest motive—that of love for the work—has indulged in the vague belief that it is an exact science; and that by mastering the principles underlying it he may not only bring relief to those who suffer, but achieve a name for himself in the scientific world. But no sooner has be begun its study than he runs counter to the universal opinion of the profession that it is *not* an exact science and never can be; that it is indeed less a science than an art; while further investigation shows that, until recently at least, medical literature was but a vast collection of empirical truths, supremely important for the future of the science, but from most of which no law for his invariable guidance has yet been deduced; therapeutic nihilism ran riot through every page of its literature; while books were filled with countless medical facts but were destitute of medical principles.

The conscientious student at this stage then is appalled. Each altruistic hope fades into the mist of acknowledged nihilism, and he realizes that his success is not a question of the application of definite laws, but a question of judgment without time in many cases to form a correct judgment; that any hour of the future may bring him a moment pregnant with the fate of a human life and a human soul; and that that life with all its possibilities, depends upon the correctness of his judgment of the relative importance of a multitude of empirical truths directly and in-

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directly bearing on that case, instead of the application of well known scientific laws.

And the earnest student of medicine as a science turns again to the dream of his student days, asking himself whether the Creator of the universe who has hung the stars in the heavens by law easily comprehensible by the mind of man; who has rapped the laws of the physical universe in the atom and molecule so loosely that the exact science of chemistry has sprung from their decomposition; who has sent the carpenter of Gallilee for the salvation of man's spiritual nature, has left him on his physical side destitute of laws comprehensible by his intellingence, by the knowledge of which he may escape the disease and pain which their ignorant violation has brought upon him.

The affirmative answer to this question as to whether medicine will ever be an exact science is found in the startling advance in medical knowledge in the closing half of the 19th Century, and the immensity of the efforts put forth still to advance that progress. The specific discoveries of the past century, such as anæsthesia, the cellular structure of the tissues, and the microbic theory has revolutionized medicine and surgery. The discoveries made in laboratories have worked kaleidoscopic changes in professional opinion, and at the same time have lengthened the span of life, reduced materially the suffering of the race and introduced the apparently miraculous into modern science. For the apparently impossible things of yesterday have become not only the possible, but the common things of today. But if the progress of surgery and medicine in the way of specific achievement has been great enough to astonish him who contemplates it, its progress along general and fundamental lines has been immeasurably greater. For the greatest specific discoveries marking the century have more than a specific importance—are more than the establishment of empirical truths; each has revealed its foundation in the transcendental truth, "The unity of truth and the universality of law." Each specific discovery that has profoundly modified medicine and surgery has been an application of this universal law.

The transition from the specific and empirical to the fundamental in professional knowledge has been coincident with the transition from the specific and incidental to the fundamental in professional study, and marks the evolution of professional thought.

The first idea of medicine was no doubt a grossly anatomical one. A pain experienced was referred to some anatomical region, as an arm or a leg. The next idea was, it may be, a therapeutic one calculated to relieve that pain. Perhaps the third was a physiological one originating in man's curiosity concerning the phenomena of taking food and excreting waste products. Out of these extremely crude primitive ideas was developed in the course of years the accurate knowledge of anatomy, physiology and materia medica we now possess. The fourth fundamental branch of medical study, chemistry, was not added until that science was found to be inextricably entangled with the complete appreciation of physiological function. Here for many years rested the foundation of medical education. These sciences were and are the *sine qua non* of a medical education.

But important as they were they did not answer the questions of etiology, pathology or treatment. And they never can answer them alone. Every anatomical truth having one end attached in a muscle, bone or nerve was only half a truth; one end was left unattached; every physiological truth with its determined end springing from some organ and its function was but half a truth; the other end made no connection. It was so with every chemical truth, and the facts of materia medica. The investigations hitherto made only illustrated the truth that the thing of least importance had been shown; that the unconnected ends of established truths held the story of the final truth for which

the scientists of the ages had searched in vain.

That ultimate truth, the demonstration of whose laws was found to be the latest problem presented to a man for solution, was the truth underlying the greatest question given to man for his study—the question of life and the law of its manifestation.

Taking up the unconnected ends of scientific truths hitherto made known, these threads were woven by modern scientists into the sublimest of all the sciences, biology, or the laws of life. In this latest view of demonstrable truth culminated not only the entrancing beauty of the highest truths, but also the intense practicality of the highest truth as related not only to our own but to universal science, and today the progress of medicine is the progress of biological knowledge. Into. the warp and woof of that science has been woven the worth of the world's greater thinkers. In its development Schleiden, Huxley, Tyndal, Spencer, Jenner, Pasteur, Lister, Cohnheim, Virchow and others as great, have written their names by the side of Kepler, Newton and La Place.

It is no dream nor a fanciful figure of speech that these men have, in addition to the effect of their labors on general science, taken medicine from the realm of empirical art and placed it, at least partially in the realm of the exact science; and better still have given us the hope that the whole subject will in time become an exact science.

Previous to Schleiden's day there was no exact law laid down in medicine. But with his discovery of the cellular structure of plants he simultaneously laid the foundation of biological science and exactitude in one department of surgery. That biological discovery made by a botanist, made possible the science of modern histology and cellular pathology.

In the karyokinetic change of the cell is written the story of the regeneration and repair of wounds. Of immeasurably greater importance is the truth that the story of the cell is the story in miniature of all organic life whatever. This histological idea in connection with another biological truth, that of the development of the embryo in three layers, and that cells reproduce themselves in kind, formed the basis of Cohnheim's theory of tumor genesis; and in Cohnheim's law broke the first rays of the dawn of exactitude in surgery. For microscopic examination of tumor tissue makes exactitude of diagnosis in tumors the rule. And the knowledge gained from the behavior of these cells make the law of treatment so exact that the early removal of a malignant growth, before metastatic infection has occurred, is the only treatment considered. The treatment of benign growths is equally clear and exact.

But if the exact diagnosis of a malignant growth rendered an early operation imperative, the next biological discovery extended the possibility of a successful operation almost beyond the bounds of belief by bringing the operation wound into the domain of exact science. This was the demonstration of the agency of microscopic organisms as the cause of wound complications. This phenomena of biology was the reverse of the constructive force residing in Schleiden's cell. It was a revelation to us that the battle of life is not wholly between the individulas of the organic world we can see and feel; but that the body, being a form compounded of microscopic pieces of protoplasm, was thereby rendered peculiarly susceptible to the attacks of antagonistic micro-organisms. Nothing teaches us more respect for the infinitely small than the effects following the discovery of pathogenic micro-organisms and the demonstration of the law of their action. From that day surgeons ordered their professional lives strictly with reference to bacteria, hospitals were remodeled and new ones built along microbic lines, and the whole theory and practice of surgery was revolutionized in a degree the magnitude of which was never surpassed in any branch of science. Wound treatment was transformed as by the touch of the magician's wand; and that

which was before an empirical art became a science as exact as astronomy. For of an aseptic wound ideally treated, union by first intention can be as accurately foretold as can the movements of the heavenly bodies.

The first evidence of the transformation of an empirical into an exact science always occurs in some branch of that science. Following that law of transformation exact principles first appeared in surgery as a branch of the general science of medicine. But fundamental truths traverse stem as well as branch; and the fundamental truth above spoken of modified our conception of medicine through the discovery that the etiological factor of many diseases is microorganic in character.

All philosophical deductions from scientific truths derive their authority from the "Unity of Truth and the Universality of Law." From this postulate arises the explanation of the fact that a truth of today is a truth of all the past and all the future; and that a philosophical deduction from known truths, correctly made, will be illustrated anew by every demonstrated truth related to it.

Many years ago Herbert Spencer taught in his work on philosophical biology that the external surface of the body did not terminate as we commonly suppose, at the muco-cutaneous junction of the lips and anus, but that the skin and mucus membrane being continuous, the mucus membrane in all its indentations and involutions, was, physically speaking, as much an external surface as the skin. At the time this statement was made it had little relation to the subject of medicine specifically considered. It was merely a physical fact related to the subject of nutrition and excretion. But with the discovery of the microbic nature of infection, taken together with the fact that all microbes were external to the body, and could only gain access to the tissues by a solution of the continuity of the external covering, the accurate determination of the external limiting membrane become a matter of large importance. It marked the dividing line between the infectious and the non-infectious diseases; and consequently the method of treatment. With reference to the microbic theory, Spencer's definition of the external surface of the body was found to be not only a theoretical but a practical verity, for the vast majority of diseases affecting the surface of the body as here defined have since been found to be of microbic origin.

The demonstration of the truth that pathogenic bacteria of divers kinds are the underlying etiological factors alike in wound complications and infectious diseases, brings the treatment of these diverse conditions under one law. For, broadly speaking, the problem presented for solution in either case is the limitation of one form of life without destruction of the other. In the matter of wound infections the solution of the problem was easy. The disease being the product of the conflict between vital forces, the limited surface for absorption made the use of violent poisons destructive of pathogenic organisms possible with safety to the patient. But in infectious diseases involving especially mucus surfaces, those poisonous antiseptics were inadmissible in a strength sufficient to destroy the bacteria. For the extreme facility of absorption characterising mucus surfaces rendered toxic antiseptics equally toxic to the patient. But though the problem as presented in general medicine is more difficult of solution than as presented in surgery, a final solution does not seem impossible. The etiological factors being biological, a biological solution may be looked for, and a remote indication of the method of it may be found alike in philosophical and scientific biology. All over the earth the problem of the limitation of particular forms of life to particular habitats is accomplished without the employment of gross antiseptic clubs. Just a slight change in environment draws an invisible line over which the hardiest races cannot pass and live. If this seems very remote, we have a more practical exemplification of the same principle in scientific medicine. No microbe

is more common nor more virulent than the tubercle bacillus, and yet physiological resistance, aided by early diagnosis and prompt change of climate, has relieved many cases of tuberculosis without the intervention of any toxic antiseptic whatever. That this still is not the only way is demonstrated by the marvelous advance in the therapeusis of that most deadly and intractable of all the microbic diseases, diphtheria, by the use of antitoxine, while the unknown biological principle underlying vaccination has all but rendered small pox extinct.

But if Spencer's definition of the external surface of the body marked the dividing line between external and internal diseases, a careful consideration of it raises the more interesting question still: is there any disease external or internal with any but an external etiological cause? By the definition the only internal structures are those included within the skin and mucus membranes. Disease affecting these structures would be true internal diseases. The question is, does the etiological factor active in producing such diseases ever take its rise within those tissues themselves? I think not. I think it may be shown that from the moment of conception to the instant of death, no force, either constructive or destructive, is generated *de novo* from the true internal structures as defined above; but that every force acting therein, and even those tissues themselves, are the product of transformation of forces entering the body from outside itself. Even the blood of the foetus and mother does not intermingle, but the nourishment from the mother's blood passes through the walls of the vessels as they inosculate in the placenta. And in those cases of infectious diseases contracted in utero, the virus enters the foetus from without; though in that case the infection atrium existed in the damaged walls of inosculating foetal and maternal vessels in the placenta. If this theory is true the etiology of all diseases is simplified to a certain extent, though the simplification does not consist in the determination of any specific cause of disease. It rather consists in the determination of the place where infection may be looked for.

It has been shown above clearly, I hope, that the science of medicine has undergone an evolution; that the latest stage of that evolution is the study of biology, or the laws of the manifestation of life, both in correllation and antagonism. And that though previous to the stage of biological investigation there was absolutely no exactitude in any branch of medicine, the first great biological discovery placed immutable principles under the science of surgery. And each new discovery of a biological law has contributed anew to exactitude in some branch of the general subject of medicine.

In so doing it has contributed to the destruction of the two chief obstacles to medical progress. One of these Virchow mentioned in his oration on the anniversary of Huxley's birth, when he said that the fact that man was looked upon as a unit instead of a combination of units called cells, was the leading obstruction to the advancement of biological knowledge. The other is the fact that through all the centuries past until now, it was the belief, held not only by the laity, but by the vast majority of scientists as well, that life was not the manifestation of law or laws, but was an inexplicable gift of the God of the Heavens. That while it was never manifested outside of a physical form, it, in its manifestation, had no part in the laws by which that form was established. So long as these two beliefs entered fundamentally into scientific thought, medical and biological progress was impossible. Every student of medicine knows that in the last analysis the state of health is the unobstructed operation of the laws of life; and that disease is but the obstruction or modification of these laws. And that therefore the prime essential in treating disease is a knowledge of the laws of life. But so long as life was held to be devoid of laws; so long as it was supposed to be a miraculous phenomena superposed upon the law-governed physical world, know-

ledge of supreme importance could not even be imagined.

But in the development of chemistry it was seen that the doctrine of revelation, that man was created out of the dust of the earth was not a dream, but a scientific verity; here was first seen the truths that on one side at least life was connected with the physical.

With the two visions through the microscope, of the unicellular protozoa, and Schleiden's discovery of the cellular structure of organic tissues, taken in connection with the truth that the unicellular protozoa had all the fundamental functions common to the higher organisms, there was laid the foundation of a scientific and philosophical doctrine which, while it shocked the world with the magnitude of its import, at the same time modified every science and invested every truth, whether demonstrated in the past or to be demonstrated in the future, with a new importance.

This was the doctrine of evolution, as propounded by Darwin and Spencer.

Beginning with the fire nist that filled the heavens Spencer taught with matchless rhetoric and resistless logic that the laws of life had their beginning there; traced them to the culmination of their beauty, first in the stars that are hung in the heavens; and next in the glowing color of the lily and the rose; and showed that these laws, passing through star and flower, reached the climax of their splendor in the brain of a Shakespeare which conceived a Hamlet. Here then, in the doctrine of evolution as proclaimed by Spencer, was the most complete and exhaustive attempt at tracing the laws of life from beginning to end; and I believe that the student of the *principles* of medicine and surgery can derive much insight into those principles by the study of philosophical biology.

For the connection between the doctrine of evolution and medicine is not as remote as it seems. If we cannot reach any fundamental conclusion concerning disease until we have reached a fundamental understanding—not of life itself, but of the laws of it—(and we cannot,) we must admit that medical progress is impossible if there be no laws of life to be understood. If there be no biological laws, pathological laws are impossible. In the absence of both, medical science is an impossibility.

In the determination of this question then each student of the ultimate principles underlying the science of medicine is irresistibly driven to a decision for himself of the most gigantic question that ever vexed the souls of men—the basis of the struggle between science and religion. The one side holding that the phenomena of the universe are the direct results of the spontaneous acts of a Creator without the intervention of law; the other that every phenomena is the product of, and is explicable by, either known laws or unknown laws possible of discovery; and that the highest expression of that law is laid down in the doctrine of evolution. The struggle brought to pass by the effort of each side to establish the truth of its particular dogma has often disgraced civilization. It has prepared the torture chamber for the student; and to epithet "materialist" has been replied "Superstition."

But truth, like life, is the product of conflicting forces and equally illustrates the law of the "survival of the fittest." And out of the conflict between science and religion error has been stripped from the shaft of truth that has ever risen higher and purer still. In developing its full force to overthrow its adversary each side has blessed the word with its richest benizon. The scientific world, to establish the truth of its position, has developed the microscope, the telescope, the test tube and all the instruments of precision, by which truth is demonstrated; and the partisans of the doctrine of special creation, with its central thought of divine love, have builded hospitals, churches and schools.

As to which side of the controversy the medical profession as a whole has either consciously or unconsciously espoused, the question is determined by the study of biology. The intervention of law being excluded by the special creation hypothe-

sis, biological investigation would be excluded also.

Biological study presupposes the belief that life is the product of law.

That that decision can be made and do no violence to christian principles is made plain by the "Unity of Truth." If truth is a unit then demonstration and revelation will not conflict.

Transcendant as has been the practical effect of biological study on medicine and surgery, its mightiest effect has been the demonstration that principles underlying the phenomena we study, and that medicine may be made a science as well as an art.

The highest scientific statement of biological truth is found in the doctrine of evolution. The truth underlying that doctrine is that organic life is the climax of the operation of physical laws; and underlying this still rests the transcendental doctrine of "The Unity of Truth and the Universality of Law." In these ultimate truths we have at once the explanation of the fact that medical truths are the last to be unified into an exact science, and the hope that such unification is not far distant from us. If life is the climax of the operation of physical laws, and the law of its manifestation is a unit, the progress of exactitude must be, as it has been, from the simple to the complex. And out of the unity of its law is born the hope that by tracing it from the simplest manifestations upward at last we may understand it in the climax of its complexity. If this be so we must broaden our studies. We must become physicians who understand physics as well as physic.

In fundamental truths we will find a larger meaning in specific truths. The most stupendous revelation of the microscope was neither the microbe nor the cell, but this: that the law of life was one for the macroscopic and microscopic worlds. That in the battle between the microbe and the man lay revealed the primordial truth that life is the product of a battle which we call the "Struggle for Existence;" that the doctrine of physiological resistance is but a restatement in medical terms of Spencer's law of the "Survival of the Fittest" and Darwin's "Natural Selection." The medical side of this truth is that disease is not an entity as life is; but that it is only an incident in the operation of the laws of life; that the deepest truth we can study even when we study pathology is the law by which life is manifested and survives. The pathological field of observation in the dead house is but the wreck-strewn battle field on which was tested to the end the strength of antagonistic vital forces.

Discussion.

Dr. Frances Dickinson, Chicago: This paper has been very instructive to me. It has carried us over the sciences rapidly and interestingly. It will be well for us to develop our methods, as the result of our studies, along the lines suggested in the paper. The emphasis he has placed upon a knowledge of biology and of physics should be carried back to every medical college that does not require for entrance studies those branches. A knowledge of them is absolutely essential for correct thinking and a proper groundwork for future practice.

Dr. D. W. Graham, Chicago: I desire to commend the paper; I think it is a remarkable one. I wish every medical society could have more papers like it, and I hope the members of the Society, if they read no other paper in the Transactions, will read and re-read this one.

SOME CONSIDERATIONS OF EPILEPSY.

BY DANIEL R. BROWER, A. M., M. D., LL. D.

Abstract of an address made at Illinois Conference of Charities, Bloomington, Nov. 20, 1899.

Epilepsy is a disease that has been recognized and accurately described by both profession and laity from the most ancient times. Hippocrates, four hundred years before the Christian era, gave considerable attention to it, and has left for our edification an elaborate argument upon the then controverted question as to whether or not it be an infliction from the Gods, and answers the question in his argument in the negative. No more striking descrip-

tion of the disease has ever been written than that by Lucretius, in "*De rerum natura*," about seventy years B. C. But, notwithstanding its so early recognition in the history of the world, the knowledge that has been accumulated that is beneficial to the victim is not proportionally great. Epilepsy has for its special symptom a sudden and complete loss of consciousness that may be but for a few minutes and may occur several times daily, or but a few times in a long life. Between these seizures the individual may be just as capable as any one in the enjoyment of life and in the pursuit of its ordinary avocations. Indeed, it is sometimes associated with genius of the rarest kind, as witness the music of a Handel, the comedies of a Moliere, the poetry of a Petrach, the military genius of a Cæsar, and the religious enthusiasm of a Mahommed. And, on the other hand, it results in insanity in probably ten per cent. of the cases.

A very great deal has been done by scientific medicine in recent years in the investigation of the causes and in the search for relief for these unfortunate victims, yet the number that can be successfully treated in their own homes is small. And even of the number that might be benefitted by such scientific treatment, there is only a minority that can afford to avail themselves of the same.

Epilepsy is a common disease. Various estimates have been made as to percentage ranging from one in a thousand persons to one in five hundred, and how best to care for these victims of a vicious inheritance is the great problem. In my opinion philanthropic people have given too little attention to the consideration of this important topic. We have easily accessible to all our superb institutions for the care of the insane, the blind, the deaf, and the dumb, and the feebled-minded, but the epileptic has no place, and but few can receive proper treatment at their own homes. The ordinary hospital will not receive them or will care for them only sufficient to bridge them over some special emergency, and many of them drift into our poorhouses, who might become largely self-supporting, and be in the enjoyment of such social, educational and religious privileges as are within their capacity and to which they are justly entitled.

The first effort made at a proper solution of this question was some fifty years ago in the village of La Force, near Lyons, France, and this little effort was enlarged upon and improved by the philanthropic clergymen who founded the Bethal epileptic colony in Westphalia, thirty years ago. This institution, beginning with four, has gathered together over a thousand persons residing in over sixty houses scattered over a large farm and supplied with numerous and varied employments. They have a dairy farm, a garden, all kinds of workshops; there are cabinetmakers, painters, printers, bookbinders, blacksmiths, and a happy, prosperous and almost self-supporting community. Nine other epileptic colonies, with this one as the model, have been established in Germany, one in Zurich, in Switzerland, and one in Holland. In our own country one is in successful operation in Gallipolis, Ohio, and one in New York, the Craig colony. In California at the Sonoma Home for Feeble-Minded Children, buildings are about being erected for the same colonization purposes, and Massachusetts, Pennsylvania and Wisconsin are struggling with the same important problem. The State of Illinois can no longer afford to neglect these people, and there should be established somewhere in this State where the climatic conditions are favorable, and land can be had in abundance, and transportation is easy, a colony for epileptics. At least a thousand or fifteen hundred people can be gathered together in such a colony, and an acre of land to a person should be the minimum allowance, and if the State will establish this philanthropic institution, there may be some hope in the near future, not only of providing these people with the comforts of life to which they are entitled, but to make them largely self-supporting, and also to diminish the rate of increase of this unfortunate disease in the community.

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CAUTION! CAUTION!

The new law regulating the practice of medicine and the State Board of Health charged with the duty of enforcing it, are just now going through the stress and storm incident to all changed conditions. It is not at all surprising that both are being attacked by Bland and his Illinois Union Medical Association. That Bland and his ilk are attacking should be sufficient reason for all honorable medical men, and especially members of the State Medical Society, to use the greatest circumspection in speaking of these matters. Expressions made for use in the public or medical press should be especially guarded as they will be quickly seized and made use of by the mercenaries to the detriment of all honest practice and beneficent laws. No one will maintain that the present law is perfect. Indeed, it is concededly imperfect, and should be amended at the next session of the legislature. The amendments which the members of this Society desire to have made are designed to make it better and more stringent. The amendments which Bland desires to have made are, to wipe it off the statute books entirely and to substitute nothing in its place. Which horn of the dilemma will our members take? As regards the State Board of Health the same remarks could be made. Let reforms in its personnel and its modes of procedure be made by its friends, and especially by the State Medical Society, but do not innocently assist in turning it over into the hands of revolutionists who would soon apply the guillotine. Members of the Society will be pleased to know that President Moyer utterly repudiates the statement made in the daily press that he made statements derogatory to the State Board of Health. The remedy for this species of guerilla warfare is the thorough organizing of the profession, educating the honorable men so that they will not fall into the traps laid by Bland, and this can only be accomplished through the State Medical Society. K.

In the daily press of Chicago there has recently appeared many charges of a criminal character, reflecting more or less upon some members of the State Board of Health, and considerable adverse criticism upon the personel and official integrity of the Board.

With one exception the more serious charges are not supported by evidence worthy of recognition, and the exception is supported by affidavit which directly charges Dr. Meyerovitz with demanding $75.00 to procure a license to practice from the Board. Dr. M. indignantly denies the allegation and says that there is not a word of truth in it.

Regarding the charges that money was extorted from quacks and others promising immunity from legal prosecution it is hardly to be thought that if such method has been adopted by any supposed officer

of the law that it was done by the connivance or knowledge of any member of the State Board of Health, or of any one identified with it in an official capacity.

From our knowledge of the Board the profession can feel assured that these charges will be fully investigated and such action taken as the circumstances will warrant. W.

STREET RESTAURANTS.

One of the features of our modern city life is the street restaurant, where, especially during the later hours of the night a meal more or less complete can be obtained. Whether these venders of eatables are a blessing to the community in which they ply their trade is very much of a question. The ordinary city street is in a filthy condition. Horse droppings, tuberculous human sputum and other unmentionable particles constituting the filth of the highway, must certainly be dregded on the waffles, pies and tamales while they are stored in the flimsy receptacle of the vendor, or before they reach the stomach of the rounder. In these days when scientists are seeking out all the ways of preventing disease the possibilities of the wayside restaurant for infection should not be overlooked. K.

SHALL HISTORY BE REPEATED?

Almost without exception every charitable institution in this State had its inception in the philanthropic heart of the medical profession. Physicians of large experience witnessing the miseries of the blind, the insane and idiotic have sacrificed their time and strength in educating the public and the legislature to relieve their miseries. A dozen splendid buildings in different parts of the State stand as monuments to the unselfish labors of physicians, usually members of the Illinois State Medical Society.

In return for these unselfish labors what has been the attitude of the politicians to the organizers of these splendid charities? How many of the superintendents have been taken from the ranks of the State Society? What has been the character of many of these men and how fit have they been to discharge the philanthropic and scientific duties imposed upon them? How much credit have they reflected on the profession of the State?

For many years various members of our Society have advocated the establishment of an epileptic colony. Dr. Maxwell, of Mt. Carmel, at the meeting in 1893 read a valuable paper on this subject. Recently at a meeting of a State conference of public charities held at Bloomington, Dr. D. R. Brower and Dr. Hugh T. Patrick of our Society appeared and gave valuable aid to those who are laboring to secure proper care of the epileptics. A preliminary appropriation has already been secured and the next legislature will probably establish a colony on the New York plan. After securing this charity, what shall be the attitude of the State Society towards it? Shall we sit supinely by and see its management pass into political and incompetent hands? Shall the superintendent be a political doctor, skilled with a pull, but ignorant of the moral and scientific requirements of the position? Shall some of the disgraceful proceedings of the other institutions be repeated? Shall some moral and medical pervert be placed in a place demanding the highest moral and scientific standing? Or will not the State Society arouse itself and demand its prerogative of naming the men who will be a credit to humanity, to the State and the profession? K.

ORGANISE—UNITE—CENTRALIZE.

The medical profession yet remains palpably negligent of its splendid opportunities and seemingly careless of its grave, indeed urgent, responsibilities to civilization, in its sloth in mustering its units into a coherent corps which will possess that power and command that respect to which it is entitled by its lofty aims and self-sacrificing labor. There are too many counties in the Union that yet have no medical societies; in too many of the states the organizations, if they exist, are lacking in virility. United in a firmly correlated and closely conjoined series of associations, our profession can imperatively demand those well-recognized reforms that will inure to the benefit of the nation, which now, on bended knee, we but faintly suggest to the law-making powers of both large and small communities. A blind man may see that in the coming century individualism will have small place in the great undertaking of commerce, the wonderful development of industry, and the increasing efficiency of labor. Brilliant deeds will be accomplished by organziations of imposing magnitude, and by huge aggregations of capitol and of labor. This is the living lesson of the hour, from which may safely be predicted the future course of industrial evolution, at least for a generation. Shall those to whom is perforce entrusted the complicated problems of life and of disease be satisfied to halt in a stage of incomplete development, while the kings of industry lead on into operations of undreamed of magnitude? The untarnished honor and eternal chivalry of our noble profession cry a thundering "No!" We must be up and doing or the vanguard of progress will find us mired in the alluring shadow of careless indolence.. No matter how admittedly meritorious, it is not enough that a physician shall attend thoroughly to his own little work and duty. So much, indeed, must he do in common with his fellow-man, but there is for him yet more in life. If the medical profession shall not openly and courageously and unitedly lead in the education of the nation to the possibilities of stamping out contagious disease and to the tremendous saving of human life yet to be secured through the means of improved sanitation, who in the name of Science will? Every county in the Union must have a live society in direct relation with its state organization, and these latter in their turn must maintain some definite and cordial affiliation with the one great central representative body—the AMERICAN MEDICAL ASSOCIATION. No better time to perfect this work can be found than *now*. Let every physician who reads the Journal think very seriously of his own individual duty to his profession and to his country. If his county and state are not already provided with good live working societies, let him earnestly talk to his professional friends and neighbors, that they may set in motion the wheels of organization. If his societies are tame and languishing, let him conjure up means to put into them the fire of progress in medicine and the zeal of doing useful deeds for their own sake. He will not fail of his reward who does this with a pure conscience, nor will his guerdon be but vanity.—*Journal A. M. A.*

Dr. Frederick Tice, Chicago, has tendered his resignation as head physician of the Dunning Asylum. He contemplates two years' study in Europe.

Dr. D. A. Payne, Chicago, has resigned the chair of associate professor of ophthalmology, in the Chicago Clinical School, and gone south on account of ill-health.

County and District Societies.

MILITARY TRACT MEDICAL SOCIETY.

President, E. M. Sutton, Peoria.

Secretary-Treasurer, C. B. Horrell, Galesburg.

Next place of meeting, Kewanee.

At the last meeting of the McLean County Medical Society the following program was presented: "Antenatal Influences," Dr. E. K. M. Taylor, of Leroy; "Inflammation," Dr. T. R. Mullen, of Bloomington; Paper, by Dr. S. B. Cox, of Hudson.

CHICAGO GYNECOLOGICAL SOCIETY.

President, T. J. Watkins.

Vice Presidents, Reuben Peterson, L. Frankenthal.

Treasurer, A. H. Foster.

Editor, Chas. S. Bacon.

Pathologist, Emil Ries.

Secretary, W. H. Rumpf.

The Bureau County Medical Society met in Princeton November 9th. Much interest was shown by the members present. An all day session was held. Four interesting papers were read and thoroughly discussed. The attendance was twenty-two. The officers of the Society are: President, S. W. Hopkins, Walnut; 1st Vice President, B. F. Landis, Tiskilwa; 2nd Vice President, M. H. Blackburn, Dover; Secretary and Treasurer, A. E. Owens, Princeton.

BRAINARD DISTRICT MEDICAL SOCIETY.

This society held its fall meeting at Lincoln, Logan county, October 26. Interesting papers which provoked active discussion were read by C. E. Black, of Jacksonville, on "Necrosis of the Tibia;" by F. P. Norbury, of Jacksonville, on "Localization of Cerebral Hemorrhage," describing particularly the interesting case of Dr. L. A. Frost, and by G. N. Kreider, of Springfield, on "Stone in the Urinary Bladder and Pelvis of the Kidney." Others presented clinical cases. The mid-winter meeting will be held in Jacksonville. M. Lee, of Atlanta, and J. T. Woodward, of Lincoln, joined the society at the Lincoln meeting.

The District Medical Society of Central Illinois held its twenty-fifth semi-annual session at the St. James Hotel parlors in Pana Tuesday, October 31st. The attendance was greater than at any previous meeting. Every paper on the program was read and was thoroughly discussed, and the interest was excellent. The program was:

Mastitis in Puerperal Women, Theodore Thompson, Shelbyville, discussed by Drs. Miller, Connor, Huber, Carroll, Eddy, Sparling, Nelms, Catherwood, Humphrey and Haynes.

Calculus in the Kidney and Urinary Bladder, Geo. N. Kreider, Springfield, discussed by Drs. Connor, Spicer and Nelms.

Prophylaxis of Typhoid Fever, J. H. Miller, discussed by Drs. Catherwood, Simpson, Huber, Rivard, Sparling, Eddy, Whitten and Nelms.

Microscopic Examinations of the Blood in Diagnosis of Disease, S. E. Munson, M. D., discussed by Dr. Spicer and others.

Some Points in the Diagnosis of Nervous Diseases, Everett J. Brown, Decatur.

Intestinal Auto-Infection, G. J. Rivard, Assumption, discussed by Drs. Thompson, Connor and Carroll.

The following were admitted to membership:

J. H. Williamson, Assumption, graduate Missouri Medical College.

S. H. Corley, Tower Hill, graduate Missouri Medical College.

J. P. Simpson, Palmer, graduate Missouri Medical College.

F. J. Bratz, Moweaqua, graduate College Physicians and Surgeons, Chicago.

J. M. Little, Rosemond, graduate Missouri Medical College.

B. B. Griffith, Springfield, graduate

Rush Medical College, Chicago, and College Physicians and Surgeons, N. Y.

C. M. Bowcock, Springfield, graduate Jefferson Medical College, Philadelphia.

J. A. Egan, Secretary Illinois State Board of Health, graduate Chicago Medical College.

The following physicians were in attendance:

E. J. Brown, Decatur.

C. L. Carroll, J. N. Nelms, Secretary, and C. R. Spicer, Taylorville.

G. N. Kreider, C. M. Bowcock, B. B. Griffith and S. E. Munson, Springfield.

G. J. Rivard, Assumption.

W. H. Sparling and F. J. Bratz, Moweaqua.

G. W. Fringer, J. Huber, R. C. Danford, F. J. Eberspacher, J. J. Conner and J. H. Miller, Pana.

J. H. Williamson, Assumption.

W. H. Geddy, Ohlman.

T. J. Whitten, Nokomis.

T. L. Catherwood, W. J. Eddy and Theo. Thompson, Shelbyville.

J. P. Simpson, Palmer.

E. P. Staff, Ramsey.

J. Wills, Beecher City.

E. D. Kerr, Brunswick.

Moses Haynes, President of the Society, Bingham.

C. B. Johnson, President of the State Board of Health, Champaign.

Dr. J. A. Egan, Secretary of the Illinois State Board of Health.

E. J. Brown's paper was referred to as one of the best presented, but owing to the lateness of the hour the discussion of it was not taken up.

J. A. Egan, of the Illinois State Board of Health, was introduced, and gave a short talk on the work of the Board in the matter of preventing the spread of contagious diseases.

C. B. Johnson, of Champaign, President of the Illinois State Board of Health, was introduced, and addressed the meeting at some length, as to the work done of late in the suppression of quackery, magnetic healers and christian scientists.

The society adjourned to meet in Pana in April, 1900.

MACOUPIN COUNTY SOCIETY.

The semi-annual meeting of the Macoupin County Medical Society was held in the Masonic Reading Room, Carlinville, Ill., October 17, 1899.

Meeting called to order by Elias Davis, Nilwood, President pro tempore.

Present, F. C. Barto, Plainview; Elias Davis, Nilwood; E. K. Lockwood, Virden; H. W. Gobbele, Greenfield; Chas. A. Allen, Lowder; Dr. Barcus, L. H. Corr, J. S. Collins, C. J. C. Fischer, J. P. and J. Palmer Matthews, and J. P. Denby, of Carlinville.

Minutes of previous meeting read, corrected and approved.

The names of J. P. Denby, graduate of the Marion Simms College, class of '98, and Chas. A. Allen, Barnes' Medical College, class of '96, were proposed and elected to membership.

Dr. Fischer reported a female having suffered a severe blow in abdomen, followed by hemorrhage from rectum and uterus. Tenderness and swelling over ovarian region supervened with fever.

Drs. Bleuler and Denby reported a woman 35 years old, three months pregnant, first seen suffering with uncontrollable vomiting. Abortion took place on the fourth day, followed by tympanitis and peritonitis, and death on the tenth day. A post mortem revealed an invagination of the ilium four inches long at the ilio caecal valve, with gangrene of the gut.

Dr. J. P. Matthews reported a cerebral apoplexy due to arterio-sclerosis in a woman 61 years old.

The afternoon session was called to order by President Collins, and the following papers were read:

Tubal Pregnancy, E. K. Lockwood, Virden, supplemented by the exhibition of a ruptured Fallopian Tube, with a six weeks' foetus in situ.

Dr. H. W. Gobbele, of Greenfield, read a paper on "Inflammation."

The board of censors reported Carlinville as the next place of meeting, and as essayists, W. L. Penniman, Shipman; A. C. Corr, Carlinville; J. P. Denby, Carlin-

ville; C. A. Allen, Lowder, Sangamon county.

F. C. Barto, of Plainview, reported a case of snake bite which was treated classically with whiskey as a nerve stimulant. Dr. Matthews said whiskey was a direct antidote to the snake poison, while Dr. Corr said the poison was instantly diffused in the system and that alcohol should never be used in medicine.

Society adjourned till the 3rd Tuesday in April, 1900.

PROCEEDINGS OF THE ÆSCULAPIAN SOCIETY OF THE WABASH VALLEY.

The 53rd annual meeting of the Æsculapian Society of the Wabash Valley was held at Paris, Ill., October 26th, 1899.

The meeting was called to order by the President, Dr. J. D. Mandeville. Seventy-five members were present (nearly one-half of the entire membership). The minutes of the semi-annual meeting were read and approved. The reports of the Secretary and Treasurer were read, and the report received. The President then read his annual address. He spoke of his twenty-five years' connection with the society, and referred to the pleasant relations he had enjoyed with the members, which had been to him very profitable. He followed briefly the historic changes that have taken place in medicine for the last thirty-eight hundred years. He referred to the high character of the members of the Æsculapian Society, and highly commended those who can carry the quality of sympathy to the bed-side of their patients.

The second number on the program was a paper by Dr. Joseph Hall, of Westfield. He said: "More deaths result from pneumonia in temperate regions than any other disease except consumption."

The etiology and clinical features were referred to, and he advocated the use of cold applications during the pyrexia, and the lancet, the latter especially with robust patients.

The paper was received for discussion. Dr. Weinstein said: "I try in a case of this kind to find out what is the matter with my patient. I study his physical characteristics, to see if he has anything about him that will in any way affect the progress of the disease.

Cold applications are preferable to hot ones. I commend the use of the lancet in many cases."

Dr. W. A. Buchanan said: "According to my observation and experience pneumonia has become rather a rare disease in this locality. The draining of the soil, building of more comfortable homes, the people wear better and warmer clothing, and I think, are much more temperate in their habits and ways of living, with much less exposure, together with the improved sanitary condition of the town and country have almost driven the disease from this locality. The percentage of people who want for good wholesome food and comfortable clothing in this town and country is very small."

Dr. Hall closed the discussion.

The Society adjourned to 1:30 P. M.

Dr. S. J. Young opened the afternoon session with a paper on Anæsthesia. The essayist said that the subject was of sufficient importance to engage the attention of a specialist, and there should be in every community one or more physicians who make it a special object of study. The doctor referred to his experience of fifty years as an anæsthetist, with many thousands administrations of chloroform and ether, and he had never lost a case. He thought that more of the anæsthetic was given in many cases than was necessary, and he laid great stress upon the desirability of the doctor securing the confidence of his patient before beginning the administration of the anæsthetic. The anæsthetizer should never be interfered with.

The paper was received for discussion.

Dr. McKennan said: "I commend very highly the methods suggested by Dr. Young in his paper for giving an anæsthetic. The ripe experience of fifty years certainly weighs heavy in the balance in favor of his assertions. But I cannot believe that all the accidents from chloro-

form anæsthesia can be attributed to careless administration. Less than a year ago there was a death from chloroform in this vicinity. A young, healthy farmer about 35 years of age, while piling wood, dropped a heavy stick on his foot, crushing the terminal phalanx of the great toe. His physician was called and attempted to remove with small forceps the fragments of bone. The patient complained of great pain, and laughingly requested that another physician be summoned to give him an anæsthetic. It so happened that two physicians came. The patient laughed, and chided them for being so slow. He was then placed on his back, and on a properly constructed Esmarch inhaler chloroform was slowly dropped by means of a chloroform dropper. His heart seemed to be normal, and performing its functions well. Not more than 20 minims of chloroform had been used, when the anæsthetist remarked, "He isn't doing well."

I turned and felt for the pulse and dropped my ear to his side, but neither touch nor ear could detect any cardiac movement. Artificial respiration and mouth to mouth respiration, with the administration hypodermatically of nitroglycerine, whiskey, strychnine, etc., was continued for hours with no improvement and no hope. This was one of those cases of a strong, robust patient where the heart stopped before the center of respiration was paralyzed. There was no fault with the methods of administering, and the result could not have been predicted."

Dr. Ten Broek said: "I consider the paper a very good one. When I began the practice of medicine the older physicians thought they were doing a young man a favor by allowing him to administer the anæsthetic, and I foolishly acted as anæsthetist for several of them without securing any pay. This was wrong, for the responsibility is greater than that of the surgeon, in any ordinary operation. I have never had a death, but have come very near it in apparently healthy subjects, while I have administered chloroform to very old people who had organic heart disease. The surgeon who interferes with the anæsthetizer deserves a cursing."

Dr. Baum said: "I desire to call the attention of the society to a 'trick,' if you will allow me to call it such. I learned from observing Dr. Young use when giving an anæsthetic, i. e. pressing the thumbs or fingers in and upwards at the angle of the lower jaw to prevent the tongue from falling back. I do not have to use forceps for that purpose. I want to emphasize what Dr. Ten Broek has said, 'Do not allow the surgeon to interfere when you are giving the anæsthetic.' "

Dr. Barlow's paper on "Rheumatism" excited considerable interest, and was discussed by Drs. Faught, Swafford, Baum, Young, Allen, John Young and Weir. All agreed with the author of the paper that there is no specific cure, and the doctor who gets the case just before the patient begins to recover is fortunate.

Dr. C. S. Price presented a paper, "The Treatment of Self-limited Disease," which was discussed by Drs. Young, Epperson and Swafford.

Section 2 opened with a paper on "Surgical Treatment of Tubercular Peritonitis," by Dr. Luther P. Luckett.

Dr. T. N. Rafferty read a paper entitled, "A Report of a Case of Splenectomy, with Attempted Surgical Cure of Ascites Due to Cirrhosis of the Liver."

The next paper was entitled "Intubation in Acute Laryngeal Stenosis," by Dr. Walker Schell. The doctor thought that intubation was a life saving operation, but if the little patient was extremely debilitated it should not be attempted by an unskilled operator. Better for a novice to perform tracheotomy. Always administer antitoxine before or at the time of the operation.

Dr. Schell's paper provoked a lively discussion as to the merits of antitoxine. The concensus of opinion was in favor of antitoxines. After Dr. Schell closed the discussion, the society adjourned to meet at 6 P. M. in the Masonic Temple, where the annual dinner of the society was served. This dinner is provided for out

of the funds of the society, and all members and visiting physicians are always welcome.

After the dinner, the doctors returned to the Court House to resume the program. The first paper of the evening was read by Dr. Newcomb, "A Plea for Better Antiseptic Precautions in Obstetrics."

The doctor advocated the use of vaginal and intra-uterine douche of hot sterilized water after confinement. This practice was opposed by a majority of the physicians, who followed in the discussion.

Section 3 was opened by Dr. F. H. Swafford with a paper entitled, "The Law in its Relation to Physicians." The doctor dwelt particularly upon the medical expert witness. Some of his advice to the medical expert was "never tell anything on the witness stand that you do not know to be true. Don't answer hypothetical questions. Say you have never had experience along that line and that you do not know."

Dr. Swafford's paper was discussed by Drs. Ten Broek, Barlow, McAllister, S. D. Young, Price, Baum, Newcomb, Buchanan and Kerrick.

A paper on the same subject by Dr. H. C. Kibbie, of Oblong, was read by Dr. Barlow. The paper had special reference to the recent medical practice act passed at the last meeting of the legislature. It was discussed by Dr. C. B. Johnson, Mandeville and Warren. Dr. Johnson spoke of the difficulties that have confronted the Board of Health in its efforts to suppress quackery, and exhorted the doctors to fight quackery wherever they find it. From a literary standpoint the best paper of the day was by W. J. Fernald. His title, "Sociological View of Criminal Abortion," would give some idea of the contents. It was discussed by Drs. Musselman, S. D. Young, John Young, Worrell, Johnson, Ten Broek, Mandeville and Roberts.

Dr. H. A. Eidson closed the program with a paper entitled, "Failure of Medical Journals to Fulfill Their Mission in Prevailing Diseases, Causes and Cures."

The election of officers resulted as follows:

President, Dr. Z. T. Baum, Paris.

Vice President, Dr. J. A. Baughman, Neoga.

Secretary and Treasurer, Dr. H. McKennan, Paris.

Censors, C. B. Fry, Mattoon; W. A. Buchanan, Paris; John Weir, West Union; Walker Schell, Terre Haute, Ind.; J. A. Baughman, Neoga.

The society adjourned at 12:30 A. M., with 50 members present at the close.

It is an unwritten law of the society that any physician who holds a professorship in a medical college is not eligible to membership.

The Will County Society held one of its special meetings at the Duncan Hotel in Joliet Wednesday evening, November 8th.

This society has adopted a series of banquets and special meetings during the year, and on each such occasion an address is given by some prominent physician. Last year these meetings proved a great success, and the first banquet of this season occurred as stated above.

Prof. Joseph Zeisler, lecturer on Dermatology in the Northwestern Medical School gave the address of the evening. The lecturer chose for his subject the differential diagnosis of the more common skin diseases as met by the general practitioner. While showing due credit to the ability of his hearers, he stated that the average general practitioner always approaches his cases of skin disease with some hesitancy in a diagnosis and more so than almost any other branch of medicine. The reason he assigns for this condition is the fact that until recent years so little attention was paid to this branch of medicine, the facilities for study in this line being limited. Today there is not a hospital in Chicago that has one ward given exclusively to the care of skin diseases, and until the same facilities are provided for the study and care of skin diseases as for others, the college student will be deficient

in that line. In this respect Chicago as a medical center is behind Paris, Vienna and Berlin.

Prof. Zeisler lays much stress on the examination of the patient. He said: "Let the patient tell his story; listen to it all, before asking questions." Some intelligent patients will see that the doctor knows little about his case if several questions, foreign to the disease are asked before he has given his story. Questions will be more intelligently asked after the doctor has heard his story and the patient will be convinced that the doctor does know something about the disease.

Further, Prof. Zeisler said: "Do not make a diagnosis from examination of a single lesion," as he insists on an examination of entire trunk and extremities if necessary. The specialist can easily tell in most cases what further examination will reveal even with examination of single lesion. To illustrate this, seborrhœa was mentioned.

Lupus Vulgaris and Lupus Erythematosus were each described and the distinction made plain. Lupus Vulgaris being tuberculosis of the skin, accompanied with ulceration, tubercles and papules, never occurring in hairy portions, most frequently seen on the face. Lupus Erythematosus occurring in hairy portions, seldom seen on the face, starting by a bright red spot thickened and raised skin followed by fading center with cicartricial tissue.

Skin irritation due to use of morphine was spoken of. There, tendency to scratch the extremities and the peculiar delusion these patients have—the belief of the patient that he has small worms in the skin that he can remove.

Special attention was called to fact that Syphilis is frequently overlooked and mistaken for other diseases. It is a serious matter to tell a patient who believes he has never had syphilis that he is a victim of such a disease, and just as serious to pass by that disease for a simple malady. Too many symptoms cannot be considered in making a diagnosis of this disease. The frequency of extragenital chancre is not to be overlooked, neither is every lesion of the genital a syphilitic one.

Scabies was named as a skin disease that has certain localities always.

In social conversation during the early part of the evening, Prof. Zeisler showed that he is a deep thinker along political lines, and later in his address, touched on the policy of expansion as it will affect the dermatologist. In the Sandwich Islands, also in the Phillipines, Leprosy is very prevalent, and closer relations between the United States and these countries is certain to bring such cases to this country.

Dr. Edmund W. Weis, of Ottawa, Ill., Permanent Secretary of the Illinois State Medical Society, was also present. Dr. Weis consented to make some valuable remarks on the Journal of the State Society.

He spoke of its primary object, that of publishing the Transactions of the State Medical Meetings in such a form as to frequently remind the practitioner of its purpose—to act as a means of increasing the membership of the State Society, and that of being a means of urging the physicians to organize and exert their influence in a political way so that future medical legislation will be facilitated, and not embarrassed by Bland et al, thus rendering service to the public and to the practitioners.

The Journal is the only one in this State that has and will continue to publish the minutes of the different county medical societies.

Besides Prof. Zeisler and Dr. Weis, there were present Mayor John B. Mount, of Joliet; Dr. Eva McClannahan, of Manhatton; Dr. F. S. Searles, of New Lenox; Drs. J. A. Clyne, M. F. Williamson, P. J. O'Mally, J. R. Casey, L. J. Frederick, H. H. Baldwin, M. K. Bowles, Wm. Dougall, Wm. Richards, Thos. H. Wagner, H. H. Patterson, W. F. Steen, Philip LeSage, P. G. Rulien, H. E. Stephen, L. Brannon, H. H. Smith and G. M. Peairs, of Joliet.

Springfield, Ill., Nov. 14, 1899.

The Springfield Medical Club held a regular meeting in the County Court room

at 8 P. M., with Geo. N. Kreider as chairman, and Edward P. Bartlett, Secretary. Members present, Drs. Babcock, Bartlett, Berry, Buck, Bowcock, Dixon, Griffith, E. E. Hagler, G. N. Kreider, C. S. Nelson, A. E. Prince, I. H. Taylor, L. C. Taylor, and J. H. Utley.

Visitors: G. W. Bradley, Waverly; J. M. Duncan, T. A. McTaggart, Pawnee; Joseph Brayshaw, Berlin; W. C. Paine, New Holland; J. R. Pierce, Cornland; A. H. Mann, H. C. Hill, S. E. Munson, A. W. Barker, Helen Babb, M. T. Kelley, W. O. Langdon, Arthur Lee Hagler, Frank Fisher, Mack Jones, J. W. Kelly, G. L. Crocker, V. T. Lindsay, W. A. Young, J. A. Egan, F. W. Currier, city; W. B. Price, J. C. McMillan, New Berlin; G. W. Bradley, Chatham; J. W. Moffitt, Williamsville.

Minutes of last meeting read and approved. The topic for discussion was Diphtheria. L. C. Taylor opened the subject with differential diagnosis and etiology; said it was unnecessary to enter into discussion of the numerous experiments which have been made to prove that a specific micro-organism, causing or generating certain ptomaines, was the cause of the disease. Two distinct opinions prevail as to the character of the disease; one, that it is a local manifestation of a constitutional disease; the other that it is primarily local, and that the constitutional symptoms are the result of toxines which find their way into the circulation and thus poison the system. The fact that the disease can be produced artificially in animals by means of inoculation, and that where care is exercised in examining, the local appearances are manifest in advance of serious constitutional disturbances, and that a distinct micro-organism can be demonstrated in every authentic case, inclines the majority of the medical profession to the opinion that the disease is one that owes its origin to a distinct local infection. Those opposed to this theory contend that the Klebs-Loeffler bacillus is frequently found in the throat of persons who present no symptoms of the disease, and while no one will dispute this statement, it might as well be argued that the staphylococcus pyogeneus aureus does not cause suppuration, or that the streptococcus does not cause erysipelas. A certain natural or acquired resistance or immunity; the health of the subject, are all to be considered as factors upon the one hand, and the virulence of the organism upon the other, in determining why some escape and others are afflicted. The virulence of the specific germ varies in different epidemics and at different stages of the epidemics, so that every variety may be presented even in the same family, from those rapidly fatal, to those presenting the mildest symptoms.

In making a differential diagnosis one frequently encounters tonsillitis, simple or follicular, scarlatina, erysipelas and diphtheria. In tonsillitis, especially in the early stages, the tonsils are usually much swollen and present numerous white spots, corresponding to the openings of the crypts. The exudate is easily removed and does not usually leave a bleeding surface. In diphtheria the patches are either single or few in number, more tenacious, and when removed come away in the form of an organized membrane, leaving a bleeding surface. The color first light usually becomes a dark gray or black. The tonsils are rarely swollen, and swallowing is not painful as compared with tonsillitis. In scarlatina the presence of other symptoms, and the early appearance of the cutaneous eruption will promptly remove all doubt as to diagnosis. An exudate upon the palate or pharynx is, nearly always, indicative of diphtheria. In regard to clinical symptoms, the fever in diphtheria is usually lower and the pain less than in the disease from which it is to be differentiated. While it may be possible that there is an inflammatory process with development of false membrane, which is not diphtheritic, was convinced that nearly all cases of so-called membranous croup were nothing more or less than laryngeal diphtheria. In a large majority of the cases of laryngeal diphtheria there is also reddening of the tonsils with or without exudation. From

laryngitis and spasmodic croup it is to be distinguished by the absence of fever in the latter disease, and in general the symptoms are less grave. The difficulties in the way of making a critical examination in many of the cases, on account of age, etc., makes it next to impossible to make a diagnosis without the use of the microscope. The importance of an early diagnosis, both in respect to treatment and the protection of others, makes it imperative to use every means at command, where there is room for doubt in regard to the diagnosis. Method for gathering material for examination was described, and specimens of cultures were shown under microscope, by Drs. Taylor, Kelly and Munson.

H. B. Buck spoke of the constitutional treatment, laying particular stress on the value of the different nuclein preparations towards fortifying the system against the toxins of this disease. J. N. Dixon said that a few years ago the local treatment was very important, but that since the introduction of antitoxin, had become of minor importance. Local treatment was apt to open up new centers of infection when undertaken on a struggling child, and in ordinary cases should not be used. A. E. Prince spoke on intubation which he said had also fallen into desuetude. When used the original O'Dwyer should not be used, but the French modification in which the lower third is merely a loop, and obviates the danger of pushing the membrane ahead and causing suffocation. The introducer should be of the duck bill pattern. The extractor should be a powerful magnet which could be connected with a battery and makes the extraction an easy task.

Dr. R. D. Berry considered the treatment of diphtheria with antitoxin. Cited the discovery of antitoxin by Behring, and of the effects of same upon animals infected with diphtheritic poison, they being rendered immune to same by the use of the antitoxin. Behring found it necessary to have a standard of strength, of which he stated one-tenth of one cubic centimetre of what Behring called his standard, or normal solution, would counteract ten times the minimum of diphtheritic poison fatal for a guinea pig weighing three hundred grammes. One cubic centimetre of this normal serum Behring calls an antitoxin unit. Thought it strange that so large a number of physicians had never used the antitoxin, but attributed it to conservatism and fear of the action of same. When first introduced a number of deaths occurred and they were attributed to the effects of the antitoxin rather than to the disease, the fact having been lost sight of that diphtheria kills suddenly, on account of heart failure or sudden syncope. The improvement in pureness of the serum has removed many of the unpleasant effects of the earlier forms of same. Some of the unpleasant effects were albuminuria, urticaria, pains in joints, abscess and diffuse erythemia. Believes there are severe cases that antitoxin will not cure, but this fact should be no bar against its use. It is as near a specific as we will ever have. Maintains that antitoxin should always be given in diphtheria, and that one should not wait for a bacteriological diagnosis, as time is of great value and life may depend upon a few hours delay. Statistics gathered from many sources show that when the serum is given in full doses within the first forty-eight hours, the death rate is a little less than 5 per cent, and this mortality includes membranous croup. In Chicago last winter, under charge of Chicago Board of Health, antitoxin was used in 219 cases, 33 of which were intubated, and of the whole number nine cases died, a mortality of 4.1 per cent. Experience shows that serum manufactured in this country possesses as much virtue as any and that it is perfectly reliable and satisfactory. Immunizing doses should be given to children exposed to the disease, 500 units being the dose to be thus given, and is protective for from four to six weeks. To a child two years or over advises a dose of 2000 units, and repeat in twelve to sixteen hours if there is no improvement. Prefers the tissue midway between the superior spinous process

and the ribs for the injection. Effects of the injection generally prompt and constitutional treatment is usually not required. Believes that if used early and in full doses that the mortality will not exceed two to three per cent.

Dr. Bartlett spoke a few words on the paralysis following this disease and its treatment.

Dr. B. B. Griffith spoke on prevention and effective quarantine.

The meeting then adjourned for lunch, after which a committee reported that a Sangamon County Medical Society should be formed which should meet on the second Monday of each month at 8 P. M., with social features. A committee was appointed consisting of S. E. Munson, L. C. Taylor and E. E. Hagler to report a constitution and by-laws at the next meeting, December 11th, when permanent officers will be chosen.

PEORIA CITY MEDICAL SOCIETY.

President, O. J. Roskoten.
Vice President, E. M. Sutton.
Secretary, N. M. Sedgwick.
Treasurer, Emma Lucas.
Censor, J. C. Roberts.

Correspondence.

Editor Journal:

I sincerely hope that every member of the Illinois State Medical Society has read the series of letters contributed by Dr. A. C. Corr on "The relations existing between the State Society and the State Board of Health." Dr. Corr has shown very clearly and conclusively that that Board is a creation of the State Society, and that its success depends upon the attitude assumed by the medical profession toward it.

If the personnel of that body has not at all times been what it should be, the organized profession is to blame, and not the appointing power. The State Society should and can control appointments to this Board. A vacancy will occur December 31st, that geographically belongs to Cook county. It is the duty of Chicago physicians to select some good man and see that he is properly indorsed. Unless this is done it is childish to make complaint if a bad appointment is made.

J. W. Pettit,
Chairman Legislative Committee.

In the Chicago Record of November 10, Dr. J. A. Egan, Secretary of the State Board of Health, writes the following letter, which explains itself:

"Springfield, Ill., Nov. 9, 1899.

To the Editor—It may be, as alleged in the Record of this morning, that 'unlawful practitioners are bold and numerous' in Chicago. If such be the case this office has no knowledge of the fact. Undoubtedly, however, in Chicago, as in large cities in other states having laws far more stringent than those in effect in Illinois, the statute regulating the practice of medicine is not strictly complied with. That this law should be violated in some instances is perfectly natural. In this connection, however, there is a wide difference between a professed treatment and actual practice. Proof of the latter is always difficult, often impossible to obtain. I refer now to proof sufficient to convince the average jury.

"Statements to the effect that quacks, i. e., unlicensed practitioners, 'have flourished during the last two years as never before in the city' are not sustained by facts. In truth the very reverse is the case. Equally false is the assertion that the advertisementsof these 'unlawful practitioners,' who are reported both 'bold and numerous,' are 'conspicuous in the newspapers.' In neither The Record, the Tribune, the Inter-Ocean, the Times-Herald nor the Chronicle of this morning can be found the advertisement of even one physician who is not licensed by the Illinois State Board of Health on examination or on the presentation of a diploma from a medical college recognized by the Board. In the majority of instances the licenses in question were issued before the present Board assumed office. It is true that in a few cases there is published the cards of licensed

midwives who, usurping the functions of physicians, advertise to treat human ailments. It is likewise true that in every case an authorization for the prosecution of the violater of the law has been issued by the Board. It is also a fact that authorizations have been issued for the prosecution of every non-registered practitioner who has advertised in the daily papers of Chicago during the last month. In some cases a conviction has been secured. In others suits are still pending.

"Parenthetically in this connection it may be stated further that in every case when a violation of the medical-practice act is reported to this office a warning notice is immediately sent to the violator. Should not the practice reported be discontinued after a reasonable time an authorization for prosecution is issued. This Board has never received instructions from any one to disregard the practice of certain non-licensed practitioners. The issuance of an authorization, however, does not convict the violator of the law. Proof of practice must be obtained. This is rarely furnished by the persons making the complaint and the Board has yet to receive in the enforcement of the law the assistance of those who are so freely criticising it.

"So far as 'immunity,' 'petty blackmailing' and 'favoritism' are concerned this office has no knowledge of such, although it is claimed that these practices are 'too common to attract much attention.' No charges of this character have ever been made, even anonymously, to this office during the two and one-half years I have been Secretary. Undoubtedly, however, it is possible that certain persons claiming to represent the Board have called upon presumed violators of the medical-practice act, and under threats of prosecution have compelled the delivery of money, jewelry and other articles of value. This Board, however, is no more responsible for this than is the city of Chicago, for the bogus inspectors claiming to represent different departments in the city hall, who, under various plausible pretences, obtain entrance to dwellings and ransack the same, after sending the occupants to the garret or the basement on various will-'o-the wisp chases.

"The enactment of the present medical practice act was secured through the united efforts of the legislative committee for the Illinois State Medical Society and the State Board of Health sustained by the influence of the majority of the physicians of the State. This law, though by no means the legislation desired by the committee, was the best that could be obtained. The members of the State Board of Health and of the committees referred to were unanimously in favor of the bill originally introduced creating a State Board of Medical Examiners, leaving the State Board of Health free to perform sanitary duties alone. It was only when the impossibility of securing such legislation became apparent that a compromise bill was introduced, covering the salient features embraced in the proposed bill and the act then in force, the creation of a new board alone excepted. There would have been no difficulty whatever in obtaining the law desired had the physicians of the State given less heed to the misrepresentations of those who desired to remove from the statutes all medical laws whatever.

"The law in effect, which received in the house of representatives 129 votes in the affirmative and none in the negative—this, too, when not over 130 members were in the assembly—has received the indorsement of the Illinois State Medical Society, the Chicago Medical Society and of various county medical societies in the State. Its imperfections—there are many—can be easily remedied two years hence if the medical profession of the State so will. I personally am in favor of the reintroduction, with slight modifications, of Senate Bill No. 167 (Mr. Gardner) 'for an act to establish a state board of medical examiners, prescribing its powers and duties, to provide for the licensing of practitioners of medicine and midwifery and to regulate the practice of medicine and midwifery in the State of Illinois, and to repeal all acts or parts of acts conflicting therewith.'

Very truly yours,
J. A. Egan, M. D., Secretary."

The following communication received in answer to a circular letter sent to every new licentiate, July 1st, 1899, by the courtesy of the Secretary of the State Board of Health, tells its own story. There are other "outsiders" who would join the Society, and are worth looking after. Can we not devise some means of reaching them?

————, Ill., Nov. 19, 1899.

Dr. Geo. N. Kreider, Treas. Illinois State Medical Society.

Dear Doctor—Accompanying my license for the practice of medicine in this State, issued in June, 1899, was a notice from you calling my attention to the Illinois State Medical Society, and kindly asking me to join through the medium of a local organization.

I am not only willing, but anxious to become a member, as I know I will receive benefits therefrom, and firmly believes that it is to the interest of the profession to have its practitioners members of a fraternal organization, but the conditions of affairs existing in this locality prevent me from seeing my way clear to become a member of such, and I write hoping I may receive some light from you.

I have made inquiries of a number of practitioners in this county, most of them at Charleston, and was amazed to hear that there was now no local medical society; that there had been, but that it had been for some time "on wheels" and had foundered.

In my three months' practice here I have come to realize that their statements must be true as there seems to be no regard for ethics with some, not only towards me, but towards others as well, and prices are cut deplorably to gain ground in another's field.

Only three days ago I was compelled to withdraw from a case of typhoid fever in the stage of defervescence because I could not endure the insult of a physician from Charleston working his way into my case against my wishes, leaving medicine he knew I did not use, and telling the family that he would call when sent for again.

The patient lives two miles south of here, making it —— miles from Charleston. This could not have been directed against me personally, as I do not know that the doctor had ever heard of me before, and he, being a man of an honorable profession would surely not have directed his attentions against a brother physician who has been out of college only about five months, unless his mind had been previously well trained for such.

I recite this to illustrate the condition of affairs in this county and the need of an organization here, and trust that, as several of my physician friends are also anxious for such organization, there will soon be one established or renewed here, and that there may be some way in which I might be honored by uniting myself to the Society of which you are Treasurer.

Thanking you for your generous offer, I am,

Fraternally yours,

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NOTICE.

At the forthcoming meeting of the Society Dr. Joseph. B. De Lee the well-known obstetrician will read a paper on "The Aseptic Conduct of Labor," and will demonstrate the methods in use in the Chicago Maternity Hospital. The discussion of the paper will be opened by Dr. J. Clarence Webster, who has succeeded the late Dr. J. H. Etheridge as Professor of Obstetrics and Gynecology in the Rush Medical College.

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Dr. A. H. Ferguson, of Chicago, will read a paper on "Early Nephrotomy," which, it is believed, will be of great practical interest and importance. He will report several cases where an early operation relieved severe kidney symptoms.

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Dr. F. Kreissl, of Chicago, will speak of Bottini's operation for enlarged prostate, and will exhibit the electrical apparatus which is used in the treatment of these cases.

State Items.

The Aurora hospital has been greatly improved. The operating room has been entirely refurnished.

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Dr. Meredith Rice, of Plainville, Adams county, has sued Dr. Joseph Aleshire of the same village for slander.

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Dr. A. F. Lemke has been appointed adjunct professor of medicine in the College of Physicians and Surgeons.

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A meeting held by "Dr." Dowie at the West Side Tabernacle, at which an address was made on "Doctors, Medicine and the Devil," was broken up by a mob of medical students.

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Dr. Henry P. Newman, Chicago, treasurer of the Association, has returned from his European trip. The doctor made Paris his objective point for certain medical investigations.

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A child, 4 years old, in Hammond, Ind., died of diphtheria recently and the coroner charges the parents with willfully neglecting to bring in medical aid. Their guidance is said to have been the doctrines of "Dr. John Alexander Dowie," of Chicago.

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The Corr hospital in Carlinville has had six capital operations in its well equipped operating room since its opening reception to the public this year, and has on its staff all the local physicians and surgeons of the city.

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Dr. John B. Murphy gave a dinner at the Auditorium Annex October 11, in honor of Sir James A. Grant, Ottawa, and Dr. Rafael Lavista, of Mexico. The following were present: Drs. Senn, Fenger, Bridge, Lydston, Evans, Butler. Later in the evening they attended the meeting of the Chicago Medical Society, where addresses were made by the guests.

The suit for malpractice against Dr. Robert E. Coy, of Rockford, Ill., in which the plaintiff asked for $10,000 damages, was on November 1 dismissed, the plaintiff paying the costs. The case was one in which diseased bone was removed from the foot, and later, the disease extending, the foot had to be amputated. All of Coy's professional confreres were ready to endorse his conduct of the case.

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Dr. W. R. Spratling, Sonyea, N. Y., presented the claims of the epileptics of Illinois before the Conference of Charities and Correction, recently held at Bloomington, Ill. His suggestion was that the State secure large acreage and available soil and establish a colony and provide employment for the patients. The insistent point was that it be a colony, not an asylum, as are the institutions of Massachusetts, Pennsylvania and Ohio. The economy of colonization was illustrated and Dr. Spratling claimed the proof of it in the three years' experience of the Craig Colony.

Letters each with enclosure have been received from:

Geo. Bley, Beardstown.
A. Lee Hagler, Springfield.
W. O. Langdon, Springfield.
H. B. Brown, Lincoln.
W. R. Boggs, Macon.
A. Kann, Peoria.
Edw. Luehr, South Chicago.
E. S. Spindel, Springfield.

For Night Sweats and local hyperidroses, Hirschfeld, of Berlin, has found that a mixture of equal parts of absolute alcohol and a 40 per cent solution of formaldehyde is nearly specific. Owing to the dangers of intoxication if too much is used at one time, only part of the body and from 5 to 10 c.c. are used at one time. If the fumes of formaline are very disagreeable cotton saturated with turpentine may be held before the nose and mouth. The sweating is stopped for one or two weeks when a new application must be made.

Marriages, Deaths, Change of Address

MARRIAGES.

Aug. Bechtold and Miss May Dake, of Belleville, Nov. 1.
H. S. Skinner and Mrs. Mabel E. Cracraft, of Forrest, Nov. 4.
Guy Armstrong, medical student, and Miss Fannie Ricks, of Taylorville, Nov. 12.
Thomas Jay Robeson and Miss Frances Harper, Nov. 15, at Lakota Hotel, Chicago.
A. F. Wilhelmy, of Decatur, and Miss Grace Weaver, of St. Louis, Mo., Oct. 30.
Wm. G. Whittle, Jr., and Miss Lela A. Pierce, daughter of Dr. and Mrs. J. R. Pierce, of Cornland, Nov. 29.

DEATHS.

(Furnished by State Board of Health.)

Antes, Henry T., Geneseo, Oct. 23, 1899.
Ayres, W. N., Aug., 1899.
Cox, Noah S., Beecher City, Sept. 17, 1899.
Ellwanger, Paul, Oct. 12, 1899.
French, Amelia J., East Lynn, Oct. 9, 1899.
Gowan, Jas. E., Metropolis, Oct. 27, 1899.
Gross, Maria M., Chicago, Aug. 11, 1899.
Hickman, Thos. G., Vandalia, Sept. 21, 1899.
Kennedy, J. C., Chicago, Nov. 2, 1899.
Lins, Julius L., Wilmington, Nov. 9, 1899.
Lyons, Wm. A., St. Francisville, Sept. 14, 1899.
McClintock, Jas., Galva, Nov., 1899.
O'Connor, D. P., Charleston, Oct., 1899.
Shell, E. E., Bloomington, Aug., 1899.
Shidler, A. L., Sept. 1, 1899.
Southworth, Siocum, Kampsville, Oct., 1899.
Stettler, Cornelia S., Chicago, Oct. 20, 1899.
Smith, J. I., Shannon, Oct., 1899.
Traub, Christian, Chicago, Aug. 10, 1899.
Tucker, James I., Chicago, Nov. 11, 1899.
Van Tuyl, E. A., Riverside, Oct. 26, 1899.
Woodward, Roland E., Chicago, Aug. 6, 1899.

CHANGES OF ADDRESS.

(Furnished by State Board of Health.)

CHANGES IN CHICAGO.

Auld, J. M., 475 Ogden av. to 100 State st.
Boynton, W. E., to 351 W. 63rd st.
Ballinger, Wm. L., 103 State st. to 100 State st.
Blinn, Odelia, 126 State st. to 292 E. Indiana av.
Blackwood, A. L., to 31 Washington st.
Boddiger, Chas. E., 3199 to 2891 Archer av.
Brown, Alice B., to 375 Dearborn av.
Brown, Sanger, 34 Wash'ton st. to 100 State st.
Clayton, Chas. F., to 4 Market Circle, Pullman.
Cadwell, Ernest, 7735 Stewart av. to 2452 Wentworth av.
Christopher, W. S., 406 to 408 Center st.
Cobb, Jos. P., 3156 Indiana av. to 254 E. 47th st.
Cook, J. C., 47th st. to 5708 Jefferson av.
Cooper, A. R., 2818 Armour av. to 3121 Dearborn st.
Cross, E. D., 3142 Prairie av. to 3748 Albany av.
Dunning, Jesse, 333 Lincoln to 1221 Belmont av.
Favill, H. B., 394 Chicago av. to 100 State st.
Frankenthal, L. E., 103 to 109 Randolph st.
Fridus, S. L., Ashland Boul. to 661 W. 14th st.
Furlong, Moses, 228 E. 47th st. to 2136 Indiana av.
Gentles, H. W., 153 E. 53rd st. to 210 E. 51st st.
Grover, D. R., 767 Congress st. to 382 Southwestern av.
Grover, O. I. M., to 382 Southwestern av.
Gleitsman, Emil, 118 Park st. to 654 N. Hoyne av.
Goodkind, M. L., 3035 to 3033 Indiana av.
Hale, A. B., 69 22nd st. to 6626 Monroe av.
Halstead, A. E., 103 State st., Res. 804 Warren av. No change of address as indicated last month.
Harris, M. L., 552 LaSalle av. to 100 State st.
Harrison, W. K., to 1602 Masonic Temple.
Harvey, Don S., 9154 to 9159 Commercial av.
Hoag, J. C., 4320 Lake av. to 4669 Lake av.
Hunt, F. W., 100 State st. to Lexington Hotel.
Hunt, W. B., 100 State st. to 92 State st.
Kensington, M. L., to 271 N. Clark st.
Klebs, Arnold, 92 State st. to 100 State st.
Lee, E. H., 813 Harrison st. to 100 State st.
Long, R. D., to 813 W. Harrison st.
Lydston, G. Frank, 100 State st. to 1095 N. Clark st.
McCandless, J. C., to 6536 Ingleside av.
Mergler, Marie J., 34 Washington st. to 100 State st.
Moore, F. B., 209 Morse av. to Arcade Bldg., Pullman.
Moore, Emma M., 4679 Lake av. to 6025 Prairie av.
Malone, Geo. B., 226 to 219 Ontario st.
Parker, Helen M., 56 to 53 Warren av.
Preble, Robt. B., 1907 Deming Place to 590 Dearborn av.
Rosan, E. W., 297 55th st. to 5442 Drexel av.
Sauer, H. Edward, 1448 Sheridan Road to 398 Wells st.
Scott, T. A., 133 Clark st., new address unknown.
Small, A. R., 3131 to 3035 Indiana av.
Smith, A. W., 1326 to 1328 W. Polk st.
Stanford, Mary E., to 7850 Cornell av.
Stewart, W. T., 2106 to 1612 W. 12th st.
Stulik, Chas., 585 S. Center av. to 525 S. Lincoln st.
Trowbridge, E. G., 78 N. Ada st. to 924 Addison st.
Walker, S. J., 105 Pine st. to 34 Washington st.
Wenzlick, Wm., to 241 Dearborn av.
Webster, John C., 820 to 946 Jackson Blvd.

CHANGES FROM CHICAGO.

Beardsley, J. A., to Moline, Ill.
Buckholz, E. A., to Keensburg, Ill.
Bush, G. C., to St. Mary's Hosp., Milwaukee, Wis.
Ewing, E. W., to Spikard, Mo.
Ingals, F. M., to Highland Park.
Kellander, Jennie A., to Moline, Ill.
MacLachlin, John W., to Dayton, Wash.
Poole, Geo. W., to Danville, Ill.
Sageser, Jos. S., to Downs, Ill.
Stehman, H. B., to Pasadena, Cal., temporarily on account of ill health.
West, Eugene G., to Effingham, Ill.

CHANGES TO CHICAGO.

Appleman, J. S., from Cairo to 100 22nd st.
Allport, Frank, to 92 State st.

Christison, J. S., to 100 State st.
Hewitt, Henry M., from Franklin Grove to 4300 Cottage Grove av.
Hawey, Robt. H., to 2100 Calumet av.
Hogan, Sarah J., to 488 West Taylor st.
Leland, John T., from Normal to Chicago.
Lockyer, C., Douglas to 345 S. Paulina st.
Palvis, A. S., from March, S. D., to 725 120th st.
Podstata, Vaclav, from Kankakee to Chicago.
Replogle, B. F., from Champaign to 371 W. Park av.
Ross, D. D., from Peoria to 4123 Calumet av.
Schmidt, Louis E., to 424 State st.
Weeks, A., Allegan, Mich., to U. S. Mar. Hosp.
Wood, Chas. S., from Oak Park to 121 LaSalle st.
Winget, S. E., Wyoming, Ill., to 67 Wabash av.
Warner, A. L., Kankakee to 34 Washington st.
White, C. A., to 78 E. 26th st.

CHANGES FROM ILLINOIS.

Boyer, H. C., Newark to Minnesota.
Burton, Robt. H., Belvidere to Colorado Springs, Col.
Bentley, Morgan A., Ivesdale.
Gregory, W. G., Cave in Rock to San Diego Barracks.
Gordon, Jos. J., Cairo to Columbus, O.
Houck, R. M., LaSalle to Spokane, Wash.
Harvey, Jos. R., Stillman Valley to the West.
Holsom, Ralph R., from Ivesdale.
Kellogg, G. M., Chicago to Prescott, Ariz.
Lackey, J. S., Stanford to Kentucky.
Lillie, Park A., Tampico to Comanche, Ia.
Mengle, S. A., LaSalle to Seattle, Wash.
McFarland, Geo. C., Jacksonville to Manchester, N. H.
Moeser, Philip, New Athens to St. Louis, Mo.
Malone, W. P., Cairo to Washington, D. C.
Mack, Hugh P., from Ivesdale.
Moore, C., from Ivesdale.
Rawlings, D. W., Cantrall to Minonk.
Scruggs, S., Sullivan to Hastings, Neb.
Smith, Julian A., El Paso to New York City.
Stedman, John, Danforth to Nashville, Tenn.
Tice, Frederick, Dunning to Europe.
Taylor, T. G., Ashton to Waterloo, Ia.
Vasen, Sarah, Quincy to Philadelphia, Pa.
Warford, John D., Cave in Rock to Tolu, Ky.
Williams, Hugh T., Versailles to Texas.
Zeller, Geo. A., Peoria to Phillipines, Army service.

CHANGES TO ILLINOIS.

Allen, J. W., to Custer.
Becker, H. F., St. Louis, Mo., to Danville.
Carter, W. A., to Trenton.
Chilson, Benj., to Sharron.
Etherton, J. C., Fort Worth, Tex., to Murphysboro.
Fuqua, John W., to Urbana.
Garrison, A. T., Broadlands to Longview.
Goodwin, W. H., French Lick Springs, Ind., to Indianola.
Guthrie, J. B., to Springfield.
Howard, M. L., to Danville.
King, J. S., returns to Decatur.
Koch, John A., to Quincy.
McKinley, L. D., Topeka, Kan., to Effingham.
Metcalf, B. F., Walton, Ky., to Diona.
Perkins, Jos., Washington, D. C., to Charleston.
Radshaw, to Curran.
Reed, J. F., to Rochester.
Smith, C. L., to Aurora.
White, Persis, to Streator.
Wilcox, S. H., to Shattuc.
Wilkinson, E. B., to Chester.
Young, A. D., to Downs.

CHANGES IN ILLINOIS.

Barcroft, V. B., Walshville to Litchfield.
Brown, M. N., Golden to La Prairie.
Bartley, John M., Ridgway to Shawneetown.
Busbee, G. B., Cambridge to Englewood.
Brayshaw, M. M., Du Quoin to Murphysboro.
Blacklock, T. W., Stronghurst to Meredosia.
Beniefiel, W. F., Ivesdale to Atwood.
Blaine, W. C., Murdock to Tuscola.
Craig, C. M., Tolono to Champaign.
Connell, B. R., Davis to Rockford.
Cornish, J. V., DeKalb to Rockford.
Childs, C. F., Decatur to Ivesdale.
Dunlap, Jas. A., Springfield to Hammond.
Elliott, John M., Eureka to Normal.
Fithian, P. H., Fithian to Homer.
Fegers, Geo. W., Dallas City to Nauvoo.
Guthrie, F. A., New Boston to LaSalle.
Hughes, E. B., Bernadotte to Canton.
Harvey, W. Fred, Ray to Rushville.
Hudson, Benj., Scottville to Moline.
Hayhurst, W. C., Westport to Flatrock.
Horrell, C. B., Colchester to Galesburg.
Hinkley, James J., Westfield to Melrose.
Jackson, J. H., Mattoon to Shelbyville.
Johnston, W. W., Illinois Steel Co. Hospital to Chicago Heights.
Johnson, Wm. T., Cottonwood to Ridgway.
Kerr, R. A., Dunlap to Peoria.
Labaume, Lydia A., Geneva to Rockford.
Lingle, W. E., Degognia to Cobden.
Legier, J. T., Keensburg to Serena.
Miller, Benj. F., Wellington to Rankin.
McCann, F. P., LaMoille to Ohio.
Mansfield, J. M., Quincy to Hebron.
Mizell, A. G., New Burnside to Shelbyville.
Morse, A. W., Joliet to Odell.
Palmer, Martin J., Arcadia to Beardstown.
Prather, J. E., Glasgow to Tallula.
Prewett, Geo. D., Beecher City to Vandalia.
Purdy, Wm., Russelville to Lawrenceville.
Poindexter, Jos. S., Woburn to Mulberry Grove.
Roberts, A. J., La Grange to Ottawa.
Rowe, Jesse, Abingdon to Monmouth.
Rowland, Geo. T., Martinsville to Clark Center.
Shurtz, Richard E., Fisher to Champaign.
Sadler, Harry, Waddams Grove to Shannon.
Swanson, J. E., Woodhull to Swedona.
Shrontz, Claude F., Momence to Hospital.
Sheldon, E. M., Geneva to Seneca.
Stafford, O. B., New Boston to LaSalle.
Sells, A. C., Seaton to Aledo.
Smith, Jas. W., Cutler to Sparta.
Smith, Cyrus H., Tonica to Rockford.
Soule, Chas. E., Sheridan to Morris.
Starret, C. E., Monmouth to Elgin.
Trovillion, Milo, Columbus to Round Knob.
Taylor, Ewing K. M., DeWitt to LeRoy.
Truax, Herbert E., Chicago to Springfield.
Walters, C. H., remains in Springfield.
Wright, W. K., Mt. Auburn to Taylorville.
Wharton, J. E., Chrisman to Jacksonville.
Wright, J. W., Muncie to Fairmount.
Zorger, W. H., Champaign to Urbana.